

Ottawa Light Rail Commission

Dr. Roger Woodhead
on Tuesday, May 17, 2022



77 King Street West, Suite 2020
Toronto, Ontario M5K 1A1

neesonsreporting.com | 416.413.7755

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OTTAWA LIGHT RAIL COMMISSION
Rideau Transit Group Engineering Joint Venture -
Dr. Roger Woodhead
May 17, 2022

--- Held via Zoom Video Conferencing, with all
participants attending remotely, on the 17th day of
May, 2022, 3:00 p.m. to 5:02 p.m.

1 COMMISSION COUNSEL:

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3 Christine Mainville, Co-Lead Counsel Member

4 Daniella Murynka, Litigation Counsel Member

5

6 PARTICIPANTS:

7 Dr. Roger Woodhead, Rideau Transit Group

8 Engineering Joint Venture

9 Michael Vrantsidis

10 Gibbs & Associates

11 Mannu Chowdhury

12 Paliare Roland Rosenberg

13

14 ALSO PRESENT:

15

16 Janet Belma, Official Court Reporter

17 Elizabeth Pilbrow, Virtual Technician

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I N D E X

WITNESS: DR. ROGER WOODHEAD

Examination by Catherine Mainville.....4

The following list of undertakings, advisements and refusals is meant as a guide only for the assistance of counsel and no other purpose

INDEX OF UNDERTAKINGS

The questions/requests undertaken are noted by U/T and appear on the following pages: 65:23, 65:25

INDEX OF ADVISEMENTS

The questions/requests taken under advisement are noted by U/A and appear on the following pages:

None

INDEX OF REFUSALS

The questions/requests refused are noted by R/F and appear on the following pages: None

1 -- Upon commencing at 3:00 p.m.

2 Dr. Roger Woodhead: AFFIRMED.

3 CHRISTINE MAINVILLE: Dr. Woodhead,
4 thank you again for returning. You'll recall that
5 last time, I set out the parameters of the
6 interview. As we've discussed, I won't review them
7 again today, but the same parameters and
8 protections apply to this interview --

9 DR. ROGER WOODHEAD: Okay.

10 CHRISTINE MAINVILLE: -- which will
11 cover not only your time with the EJV but also with
12 the OLRTC as agreed with your counsel.

13 DR. ROGER WOODHEAD: Okay.

14 CHRISTINE MAINVILLE: And I think your
15 counsel wanted to put that on the record?

16 MICHAEL VRANTSIDIS: Yes. Thank you,
17 counsel. So similar to Dr. Woodhead's first
18 interview, I just wanted to make a time distinction
19 for the transcript, that being that Dr. Woodhead
20 was an employee of the Engineering Joint Venture
21 from after the time of the award of this project.
22 And just prior to the award, he was employed with
23 OLRTC.

24 And counsel, Mannu Chowdhury, is here
25 to direct any questioning or intervention regarding

1 Dr. Woodhead's time before the award, and I will be
2 in place for the Engineering Joint Venture for
3 anything thereafter.

4 CHRISTINE MAINVILLE: Thank you.

5 So I do want to start with going over
6 your work for OLRTC pre-award.

7 DR. ROGER WOODHEAD: Sorry. Can I just
8 come back to a couple of points I made on the last
9 transcript?

10 CHRISTINE MAINVILLE: Sure.

11 DR. ROGER WOODHEAD: One was to correct
12 about EJV's role, the -- versus OLRTC's role in the
13 vehicles and train control, that EJV's role was to
14 ensure that the infrastructure was capable of
15 running the vehicles and train control. It was
16 OLRTC's role to communicate the requirements from
17 the suppliers of the vehicles in the train control
18 to EJV.

19 And the other thing is I said that I
20 had written the Trial-Running Plan for Canada Line
21 in my last interview. Upon checking my records, I
22 found out that that wasn't true. I didn't write
23 the Trial-Running Plan. I approved it, and I'm --
24 I kind of managed the trial-running process. I
25 chaired the meet -- the daily meetings during trial

1 running, so I was very aware of what went on during
2 the trial running.

3 What I did author was the handover plan
4 which explained how all the records and the system
5 would be handed over to the concessionaire and then
6 to the Province and how the approvals for service
7 commencement would be obtained, so that -- that's
8 the document I obtained, not -- I -- I authored,
9 not the Trial Running Plan. So I just wanted to
10 correct that.

11 CHRISTINE MAINVILLE: Thank you. And
12 when you say the Province, do you mean the City or
13 actually the Province?

14 DR. ROGER WOODHEAD: It was actually
15 the Province. It was the Greater Vancouver
16 Transportation Authority.

17 CHRISTINE MAINVILLE: Oh, sorry. You
18 meant -- yes, okay.

19 DR. ROGER WOODHEAD: RIGHT.

20 CHRISTINE MAINVILLE: Okay.

21 DR. ROGER WOODHEAD: Or TransLink or
22 whatever. I was never very clear who it was
23 eventually handed over to, but I believe it's kind
24 of the Province.

25 CHRISTINE MAINVILLE: Okay. Okay. And

1 I'll come back to your time -- to certain aspects
2 of your time with the EJV a bit later, but let's
3 start with the bidding phase.

4 So perhaps you can tell me how you got
5 involved. You were working with SNC at the time?
6 Or, no. You came on as a consultant?

7 DR. ROGER WOODHEAD: I was a
8 consultants for SNC-Lavalin, and I had been working
9 as a consultant with them for many years, not full
10 time, but in particular, I was the technical
11 director on Canada Line for SNC-Lavalin between
12 2005 and 2010.

13 CHRISTINE MAINVILLE: Okay. And so
14 when you come on board the Confederation Line
15 project, how do you begin your involvement?

16 DR. ROGER WOODHEAD: So I was -- I was
17 working at the time on the Evergreen Line proposal
18 and the Confederation Line proposal. So I was
19 working part time on both those proposals. And I
20 might have been doing some other work as well, not
21 with SNC-Lavalin.

22 But one day SNC-Lavalin phoned me up
23 and asked me if I would, in fact, be the project
24 director for what was at the time called a DBJV on
25 Confederation Line and whether I was prepared to

1 work full time or pretty well full time on that
2 proposal and to drop my involvement in Evergreen
3 Line, so I said yes.

4 So probably, it was -- I'm guessing --
5 October 2011 that I started getting involved in
6 Confederation Line and not Evergreen Line. And I
7 had been involved in the RFQ very heavily as well.
8 So I was involved in the RFQ for Evergreen Line --
9 for Confederation Line.

10 CHRISTINE MAINVILLE: Okay. And when
11 you say the DBJV that's the Design-Build Joint
12 Venture that ultimately --

13 DR. ROGER WOODHEAD: Correct.

14 CHRISTINE MAINVILLE: -- became OLRTC?

15 DR. ROGER WOODHEAD: That's correct.

16 CHRISTINE MAINVILLE: And were you
17 involved in the industry consultations in respect
18 of the Confederation Line?

19 DR. ROGER WOODHEAD: I think so. There
20 was a meeting in Ottawa in a big shed, as I
21 remember it. Is that what we're talking about?

22 CHRISTINE MAINVILLE: There were early
23 consultations -- well, I don't want to tell you too
24 much about what the content may have been, but just
25 assessing, yes, what the industry could provide,

1 perhaps some discussions about the tunnelling and
2 maybe about the rolling stock. I don't know.

3 DR. ROGER WOODHEAD: I don't recall,
4 actually. The only thing I do recall was going to
5 Ottawa. I believe it was after the proponents had
6 been selected, and there was a meeting held in some
7 facility near the airport where local industry came
8 in and was -- was able to talk to the qualified
9 proponents for the RFP. That -- that's all I
10 remember.

11 CHRISTINE MAINVILLE: Okay. So you
12 don't have much recollection of the RFQ process
13 either?

14 DR. ROGER WOODHEAD: I just recall
15 write -- helping SNC-Lavalin to write the RFQ,
16 their proposal for the RFQ.

17 CHRISTINE MAINVILLE: Right. Okay.
18 And so at that meeting that you do recall with the
19 City, do you recall what feedback your group might
20 have had or discussions on their proposal?

21 DR. ROGER WOODHEAD: No, I'm sorry,
22 I -- I don't have much recollection.

23 CHRISTINE MAINVILLE: Okay. Do you
24 have any recollection of whether some of the
25 requirements caused concern or didn't make sense to

1 your consortium?

2 DR. ROGER WOODHEAD: Yes.

3 CHRISTINE MAINVILLE: And what were
4 those?

5 DR. ROGER WOODHEAD: So I remember in
6 early 2012, there was some issue about the -- what
7 was called the affordability cap. And RTG --
8 sorry, not -- yeah, RTG, or the DBJ -- or the RTG,
9 as it were, wrote a white paper which we sent to
10 the City basically to say that we were nervous
11 about being able to meet the affordability cap.
12 That was because we'd done a preliminary estimate.

13 And we were suggesting to the City that
14 the requirements in the contract in particular,
15 the -- the PSOS, which I'll have to remember what
16 that stands for, project something or other -- it
17 was actually the technical requirements were too
18 strict.

19 And the City or -- to -- or the
20 sponsors -- it wasn't the City at this time. It
21 was the sponsors who were IO and the City. We
22 suggested that they -- they relax some of the
23 requirements in the -- in the PSOS to allow more
24 innovation from the bidders. And we presented a
25 white paper to them, and we had several

1 suggestions. And I got the document here. There's
2 about 13 suggestions, and then we had another bunch
3 of suggestions on the stations.

4 CHRISTINE MAINVILLE: Okay. We'll just
5 pause for a sec.

6 If -- I guess this would be for Mannu,
7 but if you could identify the document that he is
8 referring to if it's been produced, and if not, if
9 it could be produced, that would be great.

10 MANNU CHOWDHURY: Certainly. We can
11 look into that.

12 CHRISTINE MAINVILLE: Thank you.

13 And, Dr. Woodhead, when you -- just
14 going back to the PSOS, when you say the
15 requirements were deemed too strict, was that
16 overall or in respect of any particular aspect of
17 the project?

18 DR. ROGER WOODHEAD: So one of the
19 things that -- that we considered important was the
20 PSOS originally proposed a fixed platform length of
21 120 metres, and we had started to think that
22 perhaps we could design a vehicle that had a higher
23 capacity than what the City was thinking about, and
24 the platform length and the vehicle could be
25 shortened. So that was one thing that we suggested

1 to them.

2 And we had several suggestions on
3 the -- the roof outline for the stations and
4 some -- some other things, actually. As I say,
5 there were about 20 suggestions we made altogether.

6 CHRISTINE MAINVILLE: And I take it
7 some, if not all of these, had to do with being
8 able to bring the cost down to try and approach the
9 City's affordability cap?

10 DR. ROGER WOODHEAD: Correct. It was
11 to be innovative and bring the cost down, yes.

12 CHRISTINE MAINVILLE: And what was the
13 City's response to this white paper?

14 DR. ROGER WOODHEAD: My memory is they
15 made some changes but not to all of them.

16 CHRISTINE MAINVILLE: Okay. Did the
17 affordability cap change?

18 DR. ROGER WOODHEAD: It might have
19 done. I -- my memory isn't good on that. It might
20 have changed. I'm not sure.

21 CHRISTINE MAINVILLE: Do you recall the
22 ultimate budget being 2.1 billion?

23 DR. ROGER WOODHEAD: Yes.

24 CHRISTINE MAINVILLE: And do you recall
25 whether that number still caused some concern to

1 the consortium?

2 DR. ROGER WOODHEAD: After -- after
3 they changed the -- after they allowed more
4 innovation, no.

5 CHRISTINE MAINVILLE: Okay. And do you
6 recall the depth of the tunnel changing as part of
7 perhaps cost-saving measures? I don't know if that
8 would have been an issue at your end or not, but...

9 DR. ROGER WOODHEAD: I can't remember.
10 So you've asked me this before. I don't -- what I
11 do know is the -- this -- the reference design from
12 the sponsors assumed there would be a bored tunnel
13 using a tunnel boring machine.

14 And RTG proposed another method of --
15 of constructing the tunnel using what was called
16 segmental -- I think it was segmental, or something
17 like that, where we would actually not use a
18 tunnel-boring machine. We would actually use an
19 equipment called a road header which basically had
20 some diamond cutters on it that would grind away at
21 the rock and cut it away.

22 So it didn't require a tunnel-boring
23 machine. That might have allowed the tunnel to be
24 shallower, but quite honestly, I don't remember.
25 What I do remember is we had to go underneath the

1 Rideau Canal in any case, so I'm not sure whether
2 we, when we got to the Rideau Canal, the tunnel
3 would have been any shallower.

4 CHRISTINE MAINVILLE: And do you recall
5 subsequent to the changes made by the City to the
6 requirements whether there was still a view that
7 the requirements were too stringent or
8 prescriptive?

9 DR. ROGER WOODHEAD: I think
10 contractors probably always think that, but I
11 believe we -- we felt the changes were -- were
12 satisfactory to us.

13 CHRISTINE MAINVILLE: Do you recall
14 what your view was of the requirements for the
15 rolling stock more specifically?

16 DR. ROGER WOODHEAD: Our only comments
17 on the rolling stock were to allow us to design the
18 rolling stock such that it would be -- it would
19 be -- it would be sufficient to meet the operating
20 criteria. It wouldn't have to be a specific
21 length.

22 As long as we met the operating
23 criteria, which was to carry a certain number of
24 passengers per hour, that we'd be allowed to design
25 the rolling stock as we -- as we did. We'd -- we'd

1 made no comments on the climatic requirements or
2 anything like that. It was just really to do with
3 the length of the vehicles.

4 CHRISTINE MAINVILLE: Okay. And was
5 that accommodated or addressed?

6 DR. ROGER WOODHEAD: Yes.

7 CHRISTINE MAINVILLE: Yes. Okay. I
8 take it there were still other -- several other
9 requirements, but you mean as it relates to the
10 length, that that's the piece where they allow more
11 flexibility?

12 DR. ROGER WOODHEAD: Yes.

13 CHRISTINE MAINVILLE: Okay. Do you
14 recall whether there was a requirement for a
15 hundred percent low-floors from the outset?

16 DR. ROGER WOODHEAD: Ooh, that's a very
17 good question, and -- and I've just been going back
18 through my notes. I don't remember that, to be
19 frank, but we -- we did propose a hundred percent
20 low-floor vehicles, so perhaps that was part of the
21 requirement.

22 CHRISTINE MAINVILLE: Okay. And do you
23 recall any concern about making it a hundred
24 percent low-floor?

25 DR. ROGER WOODHEAD: At the end of the

1 day, no. We -- we might have had some concerns
2 initially, and -- but we found suppliers were --
3 were willing to -- were able to comply with the
4 hundred percent low-floor.

5 CHRISTINE MAINVILLE: Do you recall if
6 the original choice of vehicle supplier, CAF, was
7 meeting -- was endeavouring to meet that
8 requirement?

9 DR. ROGER WOODHEAD: I believe it was,
10 yes.

11 CHRISTINE MAINVILLE: Okay. And you
12 mentioned the consortium had no comments on the
13 climatic requirements. You are referencing a
14 service-proven requirement?

15 DR. ROGER WOODHEAD: Yeah. Yeah, we
16 didn't have any comments on that.

17 CHRISTINE MAINVILLE: And what was your
18 understanding of what that requirement entailed in
19 terms of being service proven, if you have a
20 recollection?

21 DR. ROGER WOODHEAD: So -- so my memory
22 is that there had to be at least, I believe it was,
23 ten vehicles operating in a similar climatic
24 condition, and there might have been a number of
25 years specified. I don't recall that.

1 CHRISTINE MAINVILLE: But what do you
2 mean by ten vehicles?

3 DR. ROGER WOODHEAD: You have to -- the
4 supplier had to have -- to have supplied at least
5 ten vehicles to a system that was already operating
6 in similar climatic conditions.

7 CHRISTINE MAINVILLE: Okay.

8 DR. ROGER WOODHEAD: And -- and it
9 might have been for two years. I don't recall if
10 it was for two years or not.

11 CHRISTINE MAINVILLE: Okay. And could
12 you speak to the initial selection of CAF as
13 OLRTC's vehicle supplier?

14 DR. ROGER WOODHEAD: Yes, I could. I
15 could because I've checked into this. So first of
16 all, in late 2011 and early 2012, because of what
17 the contracts said, we -- we put forward a list of
18 vehicles. We -- we actually tried to pre-qualify
19 vehicles and train control suppliers in accordance
20 with the City's RFP.

21 So we spent a lot of time talking to
22 vehicle suppliers and train control suppliers, and
23 we -- I got a note here that was in accordance with
24 Schedule II of Section -- Section 2, Schedule II,
25 Section 11.1 of the RFP. And we got proposals from

1 six vehicle manufacturers and six train control
2 suppliers, and we put forward the information on
3 these 12 suppliers to the City, and the City
4 also -- City Council -- sorry -- sometimes I say
5 City, and I should say the sponsors because we were
6 actually dealing with IO and the City.

7 So the City and a councillor in a
8 council meeting in July of 2011 had said: (as
9 read)

10 "RF -- RFQ proponents will be
11 directed not to commit to a vehicle.
12 The City will focus on qualifying
13 the best construction consortium,
14 and the qualified bidders will be
15 free to negotiate with interested
16 suppliers."

17 So that was a strategy we took. We tried to find
18 vehicle suppliers and train control suppliers, and
19 we -- we put that in a proposal. And on February
20 28th, 2012, we had a design, a DPM design-something
21 meeting -- design meeting with the sponsors in
22 which we proposed all these vehicle suppliers and
23 train control suppliers, and we asked the -- the
24 sponsors to pre-qualify them.

25 And in this proposal, we -- we said

1 what the -- what these vehicle suppliers'
2 experience was in cold weather. So we -- we had
3 Siemens, CAF, Alstom, AnsaldoBreda and Vossloh who
4 had, we thought, experience -- experience in
5 similar climatic conditions.

6 CHRISTINE MAINVILLE: Okay.

7 DR. ROGER WOODHEAD: Okay?

8 CHRISTINE MAINVILLE: Yes.

9 DR. ROGER WOODHEAD: Unfortunately, the
10 sponsors said they weren't going to pre-qualify
11 the -- any of the bidders, so we just proceeded
12 trying to deal with the 12 bidders that we had and
13 trying to see who was willing to give us a final
14 proposal.

15 CHRISTINE MAINVILLE: And why was it
16 preferable for the consortium to have that
17 prequalified? Is it simply because they can then
18 just work with the one supplier and --

19 DR. ROGER WOODHEAD: Oh, no. We -- we
20 would like the City to have prequalified more than
21 one supplier.

22 CHRISTINE MAINVILLE: Oh, okay.

23 DR. ROGER WOODHEAD: But to have
24 actually prequalified them because, as you will see
25 in a little while, the vehicle we -- we selected,

1 the City said it wasn't prequalified eventually.

2 CHRISTINE MAINVILLE: Okay.

3 DR. ROGER WOODHEAD: It would have
4 saved us a lot of time and effort and sweat and
5 tears if the City had told us that in early days.
6 But to be fair -- to be fair to the sponsors, we
7 probably hadn't given them enough information for
8 them to really pre-qualify the bidders.

9 So the City did -- didn't prequalify
10 any of the bidders, so we kept working with the
11 bidders we had, which at the time -- and this --
12 sometime around this time, one of the vehicle
13 suppliers dropped out of the -- the proposal, so we
14 had five vehicle suppliers and six train control
15 suppliers to deal with.

16 CHRISTINE MAINVILLE: And so the
17 consortium ultimately selects CAF and Thales --

18 DR. ROGER WOODHEAD: Yes.

19 CHRISTINE MAINVILLE: -- correct?

20 DR. ROGER WOODHEAD: Yes.

21 CHRISTINE MAINVILLE: So Thales was
22 selected around the same time as CAF?

23 DR. ROGER WOODHEAD: Correct. Yes.

24 CHRISTINE MAINVILLE: And then what
25 happens?

1 DR. ROGER WOODHEAD: So we made another
2 presentation to the City or the sponsors on May the
3 10th, 2012, in DPM -- DPM Number 7. I guess DPM
4 stands for Design Presentation Meeting.

5 CHRISTINE MAINVILLE: M-hm.

6 DR. ROGER WOODHEAD: And at that
7 meeting, we had representatives of CAF and Thales.

8 CHRISTINE MAINVILLE: Okay. And had
9 there been meetings between CAF and Thales about
10 how they would integrate their systems and work
11 together?

12 DR. ROGER WOODHEAD: I'm not sure if it
13 had been meetings, but we made it clear to both of
14 them that they had to make sure that their -- the
15 vehicle and train control was integrated.

16 CHRISTINE MAINVILLE: Okay.

17 DR. ROGER WOODHEAD: And I think one --
18 one important point here is on Canada Line, which I
19 keep coming back to, the vehicle supplier and the
20 train control supplier had never, ever worked
21 together before.

22 So the train control supplier was
23 Thales on Canada Line. We had a lot of experience
24 with the -- they produced the train control system
25 for all the SkyTrain in Vancouver. And the vehicle

1 supplier was Rotem from Korea. And if I remember
2 rightly, Rotem had never produced a vehicle that
3 was driverless before.

4 So on that project, we -- we were left
5 with integrating Rotem and Thales, and we
6 integrated them very successful [sic]. So we
7 didn't really think there was a problem with Thales
8 and the vehicle supplier even whether they'd worked
9 together before or not, but I believe CAF and
10 Thales had worked together before.

11 CHRISTINE MAINVILLE: Okay.

12 DR. ROGER WOODHEAD: So -- but it was
13 very clearly put in both -- both of them --
14 contracts or -- or their dealings with us that they
15 had to deal with each other and make sure that the
16 vehicle and train control was compatible and
17 integrated.

18 CHRISTINE MAINVILLE: Okay. And then
19 was it at that meeting in May 2012 that the City
20 advised that CAF would not be approved?

21 DR. ROGER WOODHEAD: No. It was on May
22 25th. We got their comments.

23 CHRISTINE MAINVILLE: Okay.

24 DR. ROGER WOODHEAD: That basically
25 said that the vehicle was not -- not compliant.

1 They said things like the sponsors have concerns
2 over the choice of vehicle in terms of being
3 compliant with the service-proven definition. (As
4 read)

5 "Service history, the
6 information provided as insufficient
7 service history. Proposed vehicle
8 does not comply with the
9 requirements for a minimum of ten of
10 these vehicles that have been in --"

11 Oh, wait -- (as read)

12 "-- that have been in revenue
13 service for a minimum of two years."

14 I am corrected. They had to be -- the ten vehicles
15 had to be in revenue service for ten years. So
16 basically, they rejected the vehicle.

17 CHRISTINE MAINVILLE: Okay.

18 DR. ROGER WOODHEAD: The vehicle that
19 we had proposed was operating in Bilbao, Spain.
20 There were only eight vehicles, and the climate
21 really wasn't the same.

22 CHRISTINE MAINVILLE: Okay.

23 DR. ROGER WOODHEAD: So as I say, we
24 got these comments back on May 25th, and then we
25 had a phone call with the sponsors on June the 8th.

1 And I don't recall what was said in that meeting,
2 but we -- we -- and CAF prepared a response to the
3 City, and we had a new vehicle. It was -- it was
4 an ad hoc CCM, and a CCM was, I believe, a
5 confidential -- something confidential meeting.

6 CHRISTINE MAINVILLE: Right.

7 DR. ROGER WOODHEAD: I can't remember
8 what the other 'C' was for. And that was held on
9 June the 10th.

10 CHRISTINE MAINVILLE: Okay.

11 DR. ROGER WOODHEAD: So we made a
12 second attempt to get CAF over the bar, and in this
13 case, they used the vehicle that was operating in
14 Seville as a -- as a vehicle. And they had
15 projects that they -- that they had in similar
16 climatic conditions but not the Seville vehicle.

17 CHRISTINE MAINVILLE: Okay.

18 DR. ROGER WOODHEAD: So they had
19 various vehicles that were operating in similar
20 climatic conditions but not the Seville vehicle.

21 CHRISTINE MAINVILLE: And so that was
22 rejected again?

23 DR. ROGER WOODHEAD: Yes. So it was
24 rejected. So my memory of what happened is either
25 after that meeting or very closely afterwards, we

1 had a meeting with two people from the sponsors. I
2 believe there were three people from SNC-Lavalin at
3 that meeting. And we were told very clearly that
4 if we proposed CAF, we would not get the contract.

5 CHRISTINE MAINVILLE: Okay. And so
6 what were the next steps? You --

7 DR. ROGER WOODHEAD: We -- we listened.

8 CHRISTINE MAINVILLE: You approached
9 Alstom?

10 DR. ROGER WOODHEAD: We listened very
11 hard, so very soon afterwards, I don't think it was
12 the next day, but two or three days afterwards, the
13 three representatives of SNC-Lavalin flew down to
14 New York city and met with Alstom.

15 CHRISTINE MAINVILLE: Okay.

16 DR. ROGER WOODHEAD: And I can't
17 remember how many companies made firm proposals to
18 us, but CAF and Alstom were certainly two that made
19 firm proposals, and the pricing of the two
20 proposals in my memory was -- was quite close.

21 CHRISTINE MAINVILLE: Okay. And what
22 was the vehicle put forward initially to the
23 sponsors by Alstom?

24 DR. ROGER WOODHEAD: It was the Citadis
25 vehicle.

1 CHRISTINE MAINVILLE: And was it more
2 specific than that? Was it the Citadis Dualis?

3 DR. ROGER WOODHEAD: That's a very good
4 question. Maybe it was. I am not sure what the
5 difference is between the Citadis and the
6 Citadis Dualis, to be frank.

7 CHRISTINE MAINVILLE: Do you know if at
8 the time they had other Citadis vehicles than the
9 Dualis?

10 DR. ROGER WOODHEAD: Maybe.

11 CHRISTINE MAINVILLE: Okay. And how
12 did that meet the service-proven requirements?

13 DR. ROGER WOODHEAD: So they -- they
14 had more experience in cold weather, and the one
15 project they had that was a Citadis vehicle was in
16 Moscow.

17 CHRISTINE MAINVILLE: Okay.

18 DR. ROGER WOODHEAD: But I'm not sure
19 to be frank that they had ten vehicles in Moscow
20 that had been operating for two years. It was --
21 it was a bit difficult to find vehicles that had
22 been operating for two years in similar climatic
23 conditions.

24 CHRISTINE MAINVILLE: That metal --

25 DR. ROGER WOODHEAD: At that time,

1 there weren't a lot, but I believe what we -- what
2 they proposed with this vehicle in Moscow -- and
3 they had other vehicles that were operating in cold
4 conditions -- but they were more -- more like
5 trains than LRTs.

6 CHRISTINE MAINVILLE: Okay. And were
7 there not many because of the particular
8 requirements for this LRT? Or do you think
9 generally there wouldn't have been much even if it
10 didn't need to be, for instance, low floors and
11 going a certain speed?

12 DR. ROGER WOODHEAD: For some reason,
13 there were -- didn't seem to be a lot. The obvious
14 ones were in Calgary and Edmonton. I think at the
15 time, they were the only two systems in Canada that
16 were operating in those conditions.

17 In Montréal, the system was in a tunnel
18 all the way. There was no LRT in Montréal that was
19 operating above ground.

20 CHRISTINE MAINVILLE: Right.

21 DR. ROGER WOODHEAD: And there didn't
22 seem to be a lot of LRTs in other places with cold
23 climates. And I'm speaking from memory here, by
24 the way.

25 CHRISTINE MAINVILLE: Sure. And so

1 were there several meetings with Alstom? Or --

2 DR. ROGER WOODHEAD: Yeah. We -- we
3 got into -- because of the timing here, we didn't
4 have a lot of time because we probably met Alstom
5 and started serious negotiations sometime after
6 June 20th. Let's say June 25th. And we made a
7 presentation to the City on another 'C' --
8 sponsor -- sorry -- and another CCM on July the
9 11th.

10 So we just had one month to -- to
11 prepare a presentation, negotiate with Alstom, and
12 come to an agreement with them. But we had a lot
13 of meetings. It was a very intense period dealing
14 with Alstom and the new proposal to the sponsors.

15 CHRISTINE MAINVILLE: Okay. And in the
16 normal course, I take it you would have welcomed
17 additional time to discuss the proposal?

18 DR. ROGER WOODHEAD: I think we felt we
19 could do it in time. We didn't ask for -- we
20 didn't ask for additional time.

21 CHRISTINE MAINVILLE: Okay. And what
22 was the City's response to that proposal?

23 DR. ROGER WOODHEAD: I think -- I don't
24 have any records for that, but they obviously
25 accepted it. They presumably sent us some

1 comments, which I don't have a copy of, because
2 after all our meetings, they would send us some
3 comments about whether comparing what we had
4 produced, whether it was vehicles or stations or
5 anything in our design, and -- and they would have
6 a checklist based on the contract, the PSOS, and
7 they would comment on what we -- whether what we
8 had shown them was -- was compliant, non-compliant,
9 or what they called unobservable. In other words,
10 they didn't have enough information.

11 So I would think after these -- this
12 meeting, the City would have given us some
13 comments, and they would have said that the vehicle
14 was compliant.

15 CHRISTINE MAINVILLE: And --

16 DR. ROGER WOODHEAD: But I don't have a
17 record of that.

18 CHRISTINE MAINVILLE: Okay. Do you
19 have any recollection of whether there were
20 concerns about the fact that as you indicated, the
21 vehicles that had run in Moscow in similar climatic
22 conditions perhaps hadn't run for as long as the
23 requirement had set out or the -- or the number of
24 vehicles?

25 DR. ROGER WOODHEAD: I -- I don't

1 recall. Alstom had -- was a big manufacturer than
2 CAF, so they had a lot more vehicles operating.

3 CHRISTINE MAINVILLE: Okay.

4 DR. ROGER WOODHEAD: And the -- the
5 vehicle that they were proposing was based first of
6 all on a vehicle that had been operating in
7 Istanbul for many years, and then also operating in
8 Nantes in France for -- for several years as well.

9 CHRISTINE MAINVILLE: Okay.

10 DR. ROGER WOODHEAD: And so because
11 they're a bigger manufacturer, they had a lot more
12 vehicles operating, and they had this vehicle
13 operating in Moscow. I don't recall how many or
14 for how long, but they had a lot of experience in
15 producing vehicles for cold climates, not
16 necessarily LRVs.

17 CHRISTINE MAINVILLE: So do you recall
18 whether there were any concerns or discussions
19 about whether Alstom met the service-proven vehicle
20 requirement?

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

22 CHRISTINE MAINVILLE: Yes. And do you
23 recall whether at that time the model was
24 effectively the Citadis Spirit, whether in name or
25 not? Was that what the proposal was, or was that

1 developed subsequently?

2 DR. ROGER WOODHEAD: I -- I don't
3 really know, but I -- the Spirit rings a bell. I
4 think that was the name that we -- that was used.

5 CHRISTINE MAINVILLE: Okay. So you
6 don't -- well, do you recall any evolution from the
7 proposal to what was ultimately -- what ultimately
8 became the Citadis Spirit?

9 DR. ROGER WOODHEAD: So -- so I was not
10 involved with the vehicle at all after the contract
11 was awarded, so I couldn't comment on that.

12 CHRISTINE MAINVILLE: Okay. And do you
13 know whether there was any level of understanding
14 about whether on the joint ventures and/or the
15 sponsors and about the modifications and the nature
16 of the modifications that would need to be made to
17 the Citadis to meet North American standards or the
18 City's requirements?

19 DR. ROGER WOODHEAD: I don't recall.
20 But, Alstom, I believe, had some vehicles operating
21 in North America. I don't remember where. There
22 was -- there was always an issue about the
23 so-called crashworthiness of vehicles that were
24 produced in Europe versus vehicles in North
25 America. There was a different philosophy about

1 how to prove that the vehicles that -- were
2 crashworthy. And to be frank, I don't quite
3 remember what that was.

4 But a European vehicle in general
5 wouldn't meet the crashworthiness requirements in
6 North America. So there would -- would have been
7 some sort of modification to do with
8 crashworthiness. I would believe that Alstom had
9 some vehicles operating in North America as -- as
10 did CAF, by the way.

11 CHRISTINE MAINVILLE: Were you involved
12 in the negotiation of the Alstom and Thales
13 subcontracts?

14 DR. ROGER WOODHEAD: Yes, not very much
15 on Thales, but Alstom, yes.

16 CHRISTINE MAINVILLE: Okay. And so was
17 there two different teams working on each
18 subcontract?

19 DR. ROGER WOODHEAD: From RTG, not
20 really. I was -- I was kind of looking after the
21 vehicles and train control aspects, but we had --
22 we had a person who was very experienced in train
23 control who was -- was really dealing with Thales.
24 And I was dealing with Alstom, and I don't remember
25 if we had anyone else who was helping with -- with

1 Alstom or not.

2 CHRISTINE MAINVILLE: Do you recall the
3 name of the person who was experienced in the train
4 control in dealing with Thales?

5 DR. ROGER WOODHEAD: John Selke,
6 S-E-L-K-E.

7 CHRISTINE MAINVILLE: Okay. And so you
8 may have been the only person negotiating with
9 Alstom the terms of the subcontract?

10 DR. ROGER WOODHEAD: I may have been,
11 but I would have -- because it was a large
12 subcontract, other people in -- in RTG or the DBJV
13 would be looking over my shoulder very carefully.

14 CHRISTINE MAINVILLE: Did you have
15 discussions with Mr. Selke about the Thales
16 subcontract?

17 DR. ROGER WOODHEAD: I'm sure I did.

18 CHRISTINE MAINVILLE: Would you have
19 engaged in any kind of process to make sure that
20 the contracts aligned with each other?

21 DR. ROGER WOODHEAD: Yes, definitely.

22 CHRISTINE MAINVILLE: So you don't
23 recall any misalignment ultimately?

24 DR. ROGER WOODHEAD: Far -- far from
25 it. I -- I would believe we had the contracts

1 firmly aligned, the -- the two of them had to get
2 along with each other.

3 CHRISTINE MAINVILLE: Does that mean
4 that the integration between their two systems was
5 placed in their hands?

6 DR. ROGER WOODHEAD: Yes.

7 CHRISTINE MAINVILLE: Okay. Is that --

8 DR. ROGER WOODHEAD: I said yes very
9 quickly there, but I'm fairly sure, yes.

10 CHRISTINE MAINVILLE: Is that typical
11 that there wouldn't be a systems integrator that
12 was neither from the rolling stock manufacturer or
13 the train control company?

14 DR. ROGER WOODHEAD: I couldn't really
15 comment on that. Generally, you would want the two
16 of them to integrate with each other. That's their
17 best way to do it --

18 CHRISTINE MAINVILLE: Okay.

19 DR. ROGER WOODHEAD: -- that they have
20 to integrate with each other.

21 CHRISTINE MAINVILLE: And what was set
22 out in terms of whether there were disagreements or
23 challenges in that integration? Like, who would
24 they go to to settle those?

25 DR. ROGER WOODHEAD: They would go to

1 OLRT, or the -- or the -- or the -- or RTG --

2 CHRISTINE MAINVILLE: Okay.

3 DR. ROGER WOODHEAD: -- or OLRTC or --
4 or RTG, and I don't recall what was in the
5 contract, to be honest.

6 CHRISTINE MAINVILLE: Okay. And do you
7 have a recollection of when, pursuant to its
8 contract, Alstom was said to -- or expected to
9 receive Thales' finalized ICD, its Integrated
10 Control Document?

11 DR. ROGER WOODHEAD: No, I don't recall
12 that. I -- I don't -- I don't recall that.

13 CHRISTINE MAINVILLE: Okay. Were you
14 familiar enough with the train control aspect of
15 the project to know when it could be expected that
16 Thales would have the finalized ICD?

17 DR. ROGER WOODHEAD: No. But it
18 wouldn't be quick in my experience.

19 CHRISTINE MAINVILLE: It would not be
20 quick.

21 DR. ROGER WOODHEAD: They -- they --
22 they had -- both Alstom and Thales would have quite
23 a bit of engineering to do before they were at that
24 stage.

25 CHRISTINE MAINVILLE: Okay. So you

1 don't recall Alstom's subcontract indicating that
2 they would have that delivered to them by Thales in
3 April of 2013?

4 DR. ROGER WOODHEAD: I recall some
5 things in the contract that had to be delivered in
6 2013. And I actually saw -- although I wasn't
7 working for OLRTC, I, actually for some reason, saw
8 a copy of a letter from Alstom basically saying
9 there was a whole bunch of information they hadn't
10 received.

11 CHRISTINE MAINVILLE: Right.

12 DR. ROGER WOODHEAD: And whether the
13 ICD was in that or not, I don't know. And I
14 probably have a copy of that somewhere.

15 CHRISTINE MAINVILLE: Do you recall
16 whether that was something that you would have
17 accepted or provided for in the subcontract in
18 terms of, you know, was that from your experience a
19 realistic date, the April 2013 date, if that's what
20 the contract provided for?

21 DR. ROGER WOODHEAD: It certainly could
22 have been realistic. I couldn't really comment,
23 quite honestly.

24 CHRISTINE MAINVILLE: Okay. And you
25 don't recall discussions or back-and-forth with

1 Alstom about that?

2 DR. ROGER WOODHEAD: There were some
3 discussions about when they were going to receive
4 documents in order for them to meet their
5 manufacturing dates. Whether the ICD from Thales
6 was in that discussion or not, I can't recall.

7 CHRISTINE MAINVILLE: Okay.

8 DR. ROGER WOODHEAD: I wouldn't be
9 surprised if it was -- it probably was in those
10 discussions.

11 CHRISTINE MAINVILLE: Okay. And then
12 you were not involved subsequently in the rolling
13 stock integration?

14 DR. ROGER WOODHEAD: That's correct.

15 CHRISTINE MAINVILLE: So in terms of
16 overall systems integration, do you recall what the
17 plan was for that on this project?

18 DR. ROGER WOODHEAD: That's a very good
19 question because I think we talked before about
20 systems integration, and the EJV's reluctance to
21 take on any aspect of systems integration and those
22 words, I believe, didn't -- didn't appear in the
23 EJV's contract with OLRT.

24 The words in the contract were -- there
25 wasn't integration. It was interface.

1 CHRISTINE MAINVILLE: M-hm.

2 DR. ROGER WOODHEAD: And if I look at
3 the definition of systems integration in the
4 contract, which I have somewhere here, it makes it
5 clear that the EJV could not do that because
6 integration is defined as: (as read)

7 "Design, construction, testing,
8 commissioning of all components and
9 aspects of the systems including the
10 fixed facilities, the vehicles, and
11 the E and M."

12 So the EJV were only involved in the design of most
13 of the systems but not the vehicle and not the
14 train control. So it would have been impossible
15 for the EJV to do the systems integrator.

16 CHRISTINE MAINVILLE: And was there a
17 particular reason -- it sounds like there were
18 expressed discussions on this point.

19 DR. ROGER WOODHEAD: Right. So -- so
20 in the EJV, SNC-Lavalin was -- was partnered with
21 what was MMM at the time and is now WSP. And MMM
22 did not want any part of dealing with system
23 integration. It wasn't something they were
24 comfortable with, so the words were taken out of
25 the EJV service agreement.

1 CHRISTINE MAINVILLE: And so had it not
2 been for that, the plan would have been for EJV to
3 take on the systems integration?

4 DR. ROGER WOODHEAD: I can't really
5 answer that because it was taken out, so we didn't
6 get into any -- any discussions on system
7 integration. It was just not -- it was just taken
8 out.

9 CHRISTINE MAINVILLE: Who had put it in
10 in the first place?

11 DR. ROGER WOODHEAD: Probably OLRTC.

12 CHRISTINE MAINVILLE: Who were -- well,
13 sorry. You were with OLRTC at this time, is that
14 right?

15 DR. ROGER WOODHEAD: Correct.

16 CHRISTINE MAINVILLE: Okay. So --

17 DR. ROGER WOODHEAD: I think I
18 mentioned last time, because I worked for
19 SNC-Lavalin, I was not allowed any part of
20 negotiating with the EJV.

21 CHRISTINE MAINVILLE: I see. So you
22 weren't involved in this particular contract
23 negotiation between the OLRTC and EJV?

24 DR. ROGER WOODHEAD: No.

25 CHRISTINE MAINVILLE: Okay. So do you

1 know who was negotiating on behalf of OLRTC?

2 DR. ROGER WOODHEAD: It would be
3 Daniel Botero and Jamie Haldenby.

4 CHRISTINE MAINVILLE: And who was
5 negotiating on behalf of the EJV?

6 DR. ROGER WOODHEAD: Chris McCarthy,
7 and I gave the guy's name before -- oh, Jeff Sieder
8 with MMM, Chris McCarthy with SNC-Lavalin. And
9 there was a commercial person from SNC-Lavalin as
10 well, Douglas Hoskins. There may have been some
11 other people involved.

12 CHRISTINE MAINVILLE: Okay. And --

13 DR. ROGER WOODHEAD: And -- and just to
14 be clear here, after I became the design manager
15 for the EJV, I got involved in the final
16 negotiations on that contract, not the initial
17 negotiations. But after I wasn't working for
18 OLRTC, I -- I got involved from the EJV side.

19 And -- and that's how I'm aware that
20 the words system integration were taken out of --
21 of the contract.

22 CHRISTINE MAINVILLE: And in other
23 projects, how -- how is that structured if there's
24 a typical way to structure it? Would the designer
25 take care of at least some part of systems

1 integration?

2 DR. ROGER WOODHEAD: So I'm going to
3 philosophize a little bit here because on
4 Canada Line, there was no separation between design
5 and contractor. So the EPC contractor is
6 SNC-Lavalin -- were called, were totally
7 responsible for everything including systems
8 integration.

9 Since that time, there's been a
10 separation between engineering and construction, so
11 the engineers are now a subcontractor to the
12 construction team. And what is typical, I don't
13 really know, to be frank.

14 So I did work on the Eglinton Crosstown
15 proposal in -- in Toronto, but I don't remember now
16 what the interface was as far as system integration
17 was concerned. And in any case, the vehicle was
18 being supplied by -- by the Province, not by the --
19 not by the -- not by the contractor.

20 I've also worked on the contract in
21 Montréal, the Réseau express Montréal, and that was
22 also where the system and the vehicle were a
23 separate contract. So I'm not sure there's
24 anything typical. The contracts are different
25 these days.

1 CHRISTINE MAINVILLE: And is that for
2 liability reasons to the best of your knowledge?

3 DR. ROGER WOODHEAD: I, quite frankly,
4 don't know.

5 CHRISTINE MAINVILLE: Okay. Do you
6 have any view as to whether it's preferable for the
7 same entity to deal with design and construction?

8 DR. ROGER WOODHEAD: I have a very
9 strong view based on my Canada Line experience,
10 that that is the very best way to do these
11 contracts --

12 CHRISTINE MAINVILLE: Okay.

13 DR. ROGER WOODHEAD: -- where
14 engineering and construction are basically the
15 same. I have a strong opinion on that you could
16 say.

17 CHRISTINE MAINVILLE: And is that to
18 ensure proper integration of everything?

19 DR. ROGER WOODHEAD: Yes, absolutely.
20 Absolutely.

21 CHRISTINE MAINVILLE: Okay.

22 DR. ROGER WOODHEAD: If it's the
23 same -- if it's the same team, the same company --
24 the same company, the same partnership, they
25 obviously have to integrate everything.

1 CHRISTINE MAINVILLE: Right.

2 DR. ROGER WOODHEAD: They can't point
3 the finger at somebody else.

4 CHRISTINE MAINVILLE: And so when you
5 worked, then, subsequently, for the EJV on the
6 design, was there anyone from OLRTC working with
7 you on the systems integration aspect?

8 DR. ROGER WOODHEAD: And so as I -- as
9 I told you before, the -- let's say the
10 relationship between OLRTC and the EJV was not --
11 not the very best, but there were people working
12 for OLRTC on system integration, yes.

13 CHRISTINE MAINVILLE: And --

14 DR. ROGER WOODHEAD: Probably --
15 probably several people.

16 CHRISTINE MAINVILLE: Okay. But did
17 you nevertheless see gaps, or did that become an
18 issue?

19 DR. ROGER WOODHEAD: No, I wouldn't say
20 it became an issue for the EJV because we
21 thought -- we knew it wasn't in our scope.

22 CHRISTINE MAINVILLE: Not in your
23 scope. But as you read the definition of systems
24 integration, it should be through the design. So
25 did you not need to have an understanding of the

1 system --

2 DR. ROGER WOODHEAD: Yeah, we -- we had
3 sufficient -- we had sufficient understanding, but
4 I don't think we needed to know how the train
5 control and the vehicle interacted with each other.
6 We had a reason -- we had -- we had to know how the
7 infrastructure which we were designing -- how the
8 vehicle was integrated into the infrastructure,
9 that we had the right track work. We had the right
10 distance between the vehicle and the station
11 platform, things like this. But -- but we really
12 didn't need to know how the train control and the
13 vehicle integrated with each other.

14 CHRISTINE MAINVILLE: So when you --

15 DR. ROGER WOODHEAD: I don't believe
16 so.

17 CHRISTINE MAINVILLE: So when you talk
18 about system integration, do you mean the
19 integration of the rolling stock with the train
20 control system?

21 DR. ROGER WOODHEAD: If I look at the
22 overall definition of system integration, it's the
23 whole thing, the -- the infrastructure, the
24 vehicle, the train control, everything.

25 CHRISTINE MAINVILLE: Right. So would

1 it not also involve other aspects of the system
2 including how it is to be operated, for instance,
3 and maintained?

4 DR. ROGER WOODHEAD: Not really, except
5 we had to design as the EJV the maintenance
6 facility, so we would need to know how they were
7 going to maintain the vehicles. We also designed
8 the -- the yard around the maintenance facility, so
9 we would need to have some information on how the
10 maintainer wanted to operate. But that information
11 would be given from the maintainer to OLRTC.

12 CHRISTINE MAINVILLE: And did you
13 receive that?

14 DR. ROGER WOODHEAD: Yes.

15 CHRISTINE MAINVILLE: Did you have
16 anything like a concept of maintenance?

17 DR. ROGER WOODHEAD: I don't know if it
18 was called that, but we -- we wouldn't have -- need
19 to know how many -- how many bays they needed to
20 maintain the vehicles, how many bays in the
21 maintenance facility. We would need to know how
22 much -- how much space they needed outside to store
23 the vehicles. We would need all sorts of
24 information like that.

25 CHRISTINE MAINVILLE: And then you

1 received?

2 DR. ROGER WOODHEAD: Yes.

3 CHRISTINE MAINVILLE: So was there
4 anyone from RTM already engaged in the project
5 early on?

6 DR. ROGER WOODHEAD: I believe
7 Grant Bailey was involved very early on.

8 CHRISTINE MAINVILLE: And what about
9 operations? Did you have anything like a concept
10 of operations?

11 DR. ROGER WOODHEAD: We -- we would
12 have had to know as -- as I said before, we would
13 have had to know how many vehicles would be
14 operating and things like this.

15 But we wouldn't need to know a lot
16 of -- we would need to know how the vehicles would
17 be turned around at each end because we'd need to
18 design the tail tracks so the vehicle could --
19 could run past the station, and the driver would
20 walk to the other end of the vehicle and drive it
21 in the other direction. We would need to know some
22 things like that.

23 CHRISTINE MAINVILLE: And how did you
24 get that information?

25 DR. ROGER WOODHEAD: We would have got

1 that through OLRTC, I assume.

2 CHRISTINE MAINVILLE: And do you recall
3 any kind of document, or it was ad hoc, you know,
4 questioning or indications of how any given element
5 might be done?

6 DR. ROGER WOODHEAD: I don't recall,
7 but I would be surprised if there wasn't a
8 document.

9 CHRISTINE MAINVILLE: Okay. But you
10 don't know or recall anything called the concept of
11 operations?

12 DR. ROGER WOODHEAD: I don't recall
13 that, no. You have to realize that I was involved
14 in the RFP, so because of that, I knew some things
15 that I wouldn't have known if I'd have been
16 involved with the EJVOs.

17 CHRISTINE MAINVILLE: Okay. And had
18 you been involved in designing a system like this
19 before? I know we went through your experience
20 previously, but I --

21 DR. ROGER WOODHEAD: They -- the Canada
22 Line and -- but it wasn't a low-floor vehicle. But
23 I -- I don't know that was a huge difference, to be
24 honest. The Canada Line also didn't have an
25 overhead catenary, so there were some differences

1 between the Canada Line and the Confederation Line,
2 but many, many similarities. The Canada Line
3 didn't have drivers, so there were a few
4 differences.

5 CHRISTINE MAINVILLE: Okay. But you
6 were involved in that design?

7 DR. ROGER WOODHEAD: Yes.

8 CHRISTINE MAINVILLE: And systems
9 integration on that one?

10 DR. ROGER WOODHEAD: Yes, because we
11 were all one team.

12 CHRISTINE MAINVILLE: Right. You know,
13 looking back, do you have any view as to whether OC
14 Transpo could have been more involved in the design
15 stage on this -- OC Transpo as the operator could
16 have been more involved in the design of this
17 system earlier on?

18 DR. ROGER WOODHEAD: I can't comment on
19 that, but they were certainly involved in some
20 aspects of design. When -- when we had meetings
21 sometimes somebody from OC Transpo would be there,
22 so -- so they were not uninvolved.

23 CHRISTINE MAINVILLE: Okay.

24 DR. ROGER WOODHEAD: They weren't
25 involved in the RFP, I don't believe.

1 CHRISTINE MAINVILLE: EJV was
2 responsible for systems engineering, correct?

3 DR. ROGER WOODHEAD: Yes. Yes.

4 CHRISTINE MAINVILLE: So I take it
5 systems engineering does not mean systems
6 integration?

7 DR. ROGER WOODHEAD: Not -- no.

8 CHRISTINE MAINVILLE: And what level of
9 design was done on the systems integration --
10 sorry -- on the systems engineering?

11 DR. ROGER WOODHEAD: There was
12 eventually a full -- full design within the EJV
13 scope.

14 CHRISTINE MAINVILLE: Would that have
15 included a RAM?

16 DR. ROGER WOODHEAD: That's a good
17 question, and I can't really answer, but the RAM
18 would mostly involve the vehicle, I believe.

19 CHRISTINE MAINVILLE: Okay.

20 DR. ROGER WOODHEAD: But there would be
21 some part of the system that would be -- yeah, it
22 would -- there would be some involvement from the
23 systems in the reliability, availability,
24 maintainability for sure, yes. Yes. The answer is
25 yes.

1 CHRISTINE MAINVILLE: Okay. So EJV
2 would have been involved in that, and --

3 DR. ROGER WOODHEAD: Correct.

4 CHRISTINE MAINVILLE: Okay. And were
5 those plans mature, the ones that EJV was involved
6 in, by the time you left?

7 DR. ROGER WOODHEAD: I -- I don't
8 recall. They wouldn't be very mature, I don't
9 believe, but we would have had some discussions
10 about it for sure.

11 CHRISTINE MAINVILLE: Okay. Because
12 are those usually -- do they get developed later on
13 in time?

14 DR. ROGER WOODHEAD: Yeah. And, you
15 know, very often, with systems engineering, the
16 engineers design the system to a certain level, and
17 then the system is procured.

18 So the engineers don't decide what
19 manufacturer has been used. So the -- the
20 contractor puts the work out to tender, and
21 eventually, a manufacturer of some of the systems
22 is procured. And they're the ones who -- who have
23 to prove that they're -- what they're providing is
24 reliable, whether availability is good, and it's
25 maintainable.

1 CHRISTINE MAINVILLE: And so you don't
2 necessarily produce full designs on some
3 components?

4 DR. ROGER WOODHEAD: That's right.
5 Yeah. No.

6 CHRISTINE MAINVILLE: Okay.

7 DR. ROGER WOODHEAD: The -- the
8 contractor would usually engage someone to -- to
9 finalize the design and supply it.

10 CHRISTINE MAINVILLE: Who would do that
11 in this case? Do you know?

12 DR. ROGER WOODHEAD: OLRTC would be in
13 charge of that.

14 CHRISTINE MAINVILLE: And are you aware
15 of whether that was done?

16 DR. ROGER WOODHEAD: Oh, yeah. They --
17 they -- I'm sure they chose suppliers, and they --
18 they got this RAM information from the suppliers.
19 How we were -- because at the time I left, the --
20 the systems design was not fully developed at that
21 time.

22 CHRISTINE MAINVILLE: Okay.

23 DR. ROGER WOODHEAD: I do recall that
24 the design of the OCS, the catenary, that the EJV
25 did a preliminary design, and that was put out

1 to -- to tender by OLRTC. But I don't recall who
2 the supplier was that was selected.

3 CHRISTINE MAINVILLE: So maybe you
4 could tell me a bit more about the different types
5 of -- or categories of designs that are prepared on
6 a project like this and what EJV prepared.

7 DR. ROGER WOODHEAD: Okay. So we -- we
8 design everything, the vehicle and train control.
9 So we would design the stations, for instance.
10 There would be some equipment in those stations
11 that came from one of the suppliers that OLRTC had
12 engaged with. So we'd have to make some guesses on
13 what size rooms would be required to install this
14 equipment.

15 We designed all -- we designed the
16 track work. We did the geotechnical design. We
17 designed the maintenance facility. We did the
18 final design of the tunnel. We would design almost
19 everything but the vehicle and train control.

20 CHRISTINE MAINVILLE: Okay. And were
21 any of these designs delayed?

22 DR. ROGER WOODHEAD: Let's just say we
23 did not produce everything on schedule.

24 CHRISTINE MAINVILLE: Okay. Was
25 that --

1 DR. ROGER WOODHEAD: So I -- I don't
2 believe that delayed the completion of the project,
3 but somebody might have a different opinion.

4 CHRISTINE MAINVILLE: Okay. And what
5 was the -- what were the particular delays, to
6 which design, and what may have contributed to
7 those?

8 DR. ROGER WOODHEAD: Oh, so delays are
9 often due to getting information from other
10 parties, information that's required perhaps that
11 we weren't well enough organized. There's a lot of
12 people, a lot of communications, a lot of moving
13 parts. These projects are not easy. I don't want
14 to tell you the EJV was perfect, but there's a lot
15 of interfaces, and it's difficult to -- to do these
16 projects, but -- but so we -- we did delay some
17 things. There's no doubt about it.

18 CHRISTINE MAINVILLE: Were there any
19 particular gaps at EJV? Was it in terms of
20 resources or expertise or anything like that?

21 DR. ROGER WOODHEAD: I -- it could have
22 been resources. I don't believe it was expertise.
23 We had sufficient expertise. We -- it's difficult
24 to say what the delays were and what caused them.

25 CHRISTINE MAINVILLE: Okay. And what

1 about OLRTC? Did you see any gaps in terms of
2 their resources or expertise?

3 DR. ROGER WOODHEAD: At the start, yes,
4 but later on, no. They -- I think as I mentioned
5 last time, they had problems staffing up the
6 project because a lot of the people that they
7 thought were going to come on to the project
8 didn't. So it took them a few months to staff up,
9 but eventually, they, I believe, were fully
10 staffed.

11 CHRISTINE MAINVILLE: Okay. And did
12 that cause any particular issues, those delays to
13 being fully staffed or properly staffed?

14 DR. ROGER WOODHEAD: I couldn't really
15 comment on that. I -- I couldn't really comment on
16 that.

17 CHRISTINE MAINVILLE: Okay. And you
18 said -- you referenced earlier the relationship was
19 not the best between OLRTC and EJV. What do you
20 mean by that, or what aspects of the relationship
21 were challenging?

22 DR. ROGER WOODHEAD: So they had --
23 there was this issue about system integration and
24 what our scope was. There were issues about our
25 scope, what was in our contract, what wasn't,

1 whether our -- whether our scope included certain
2 things. We -- we'd -- it was a difficult
3 relationship. I -- I -- there was some personality
4 issues.

5 CHRISTINE MAINVILLE: Do you think that
6 ultimately had some impact or implications for the
7 success of the project?

8 DR. ROGER WOODHEAD: It could have, but
9 I -- I wasn't involved at the end. As far as I
10 could see when I left, the project wasn't going
11 badly. You know, one of the big delays was the
12 tunnel collapsed, so -- so that was a delay. That
13 caused some issues.

14 And I believe the vehicles, when I
15 left, were also late -- being late. But towards --
16 after I'd left, I -- I couldn't really comment. I
17 had some knowledge about certain things because I'd
18 gotten involved in certain things, but I -- I
19 couldn't really comment too much. I -- this --
20 they -- they had -- they had people. They had good
21 people.

22 CHRISTINE MAINVILLE: I take it you
23 can't speak to some of the issues that later arose,
24 some of what have been termed breakdowns aside from
25 the derailments such as issues with the switches or

1 track buckling. Are you able to speak to potential
2 causes of those or contributing factors?

3 DR. ROGER WOODHEAD: No. And I didn't
4 know the track had buckled, to be honest. But it
5 seems that once I left OLRTC, I worked on other
6 projects, and -- and I was at a very high level on
7 these other projects. And quite frankly, I didn't
8 have time to worry about what was happening in
9 Ottawa.

10 CHRISTINE MAINVILLE: Okay. Are you
11 aware of any issues with the ballasts?

12 DR. ROGER WOODHEAD: No.

13 CHRISTINE MAINVILLE: Okay. And while
14 you were there, then, did you have any concerns
15 about quality of the infrastructure or other
16 aspects of the project?

17 DR. ROGER WOODHEAD: We -- we had some
18 issues with quality, yes. Some of the construction
19 wasn't -- wasn't in -- in accordance with the --
20 with the specifications. I -- I seem to recall
21 there was some problems with welding on the
22 stations. I -- I don't recall there were -- there
23 were big issues on quality, but they -- EJV's
24 contract did not include anything to do with
25 supervision of the works. There was just

1 occasional inspections, so...

2 CHRISTINE MAINVILLE: So some quality
3 issues but nothing major that stands out to you?

4 DR. ROGER WOODHEAD: Not that I can
5 recall right now.

6 CHRISTINE MAINVILLE: Okay. Do you
7 know if Thales was initially aware that the EJV --
8 or would you have had an understanding that they
9 were aware or not that EJV was dealing with the
10 signalling and infrastructure interface?

11 DR. ROGER WOODHEAD: I would have
12 thought they would be aware, but I don't know for
13 sure.

14 CHRISTINE MAINVILLE: Okay. And was
15 there any eventual request for or change order made
16 for EJV to take on some aspect of the integration?

17 DR. ROGER WOODHEAD: Yes. So the --
18 the service agreement, as it is, excludes testing
19 and commissioning. So -- and I'm just going to get
20 a copy here so I can quote you what it says.

21 It says that: (as read)

22 "The EJV scope is to review the
23 prime contractor's testing and
24 commissioning plans to verify
25 engineering submittals and attend --

1 and identify -- identification,
2 attendance of witness in whole
3 points during construction."

4 So it was quite clear that we were not responsible
5 for authoring testing and commissioning plans. So
6 once OLRTC realized this, they gave us a change
7 notice to produce the system integration plans. So
8 the EJV has a change notice produced -- produced
9 the systems integration plans that had to be
10 completed before trial running.

11 CHRISTINE MAINVILLE: And when was this
12 change made? Do you have the date?

13 DR. ROGER WOODHEAD: I've got a date
14 here of January 2016, but that's Revision 3. So
15 when the first one was issued, I don't know. Let's
16 say late 2015 --

17 CHRISTINE MAINVILLE: Okay.

18 DR. ROGER WOODHEAD: -- after I had
19 left.

20 CHRISTINE MAINVILLE: Okay. And what
21 are the systems integration plans? Is that, then,
22 the overall integration of the system?

23 DR. ROGER WOODHEAD: Yeah, the overall
24 integration. But let me just see what it says
25 here. I think it says somewhere that it excludes

1 the vehicle and train control. I'd have to look at
2 this -- sorry -- a bit more carefully.

3 CHRISTINE MAINVILLE: That's fine.

4 Perhaps --

5 DR. ROGER WOODHEAD: Oh, yes. It says:
6 Vehicle and signalling tests are not included. So
7 we wrote the system integration test apart from for
8 the vehicle and signalling. And also, it was just
9 the integration test. The first article
10 inspections, the factory acceptance test, the
11 system acceptance test, and the post-installation
12 checkout tests were not part of this contract --

13 CHRISTINE MAINVILLE: Okay. And --

14 DR. ROGER WOODHEAD: -- with the system
15 integration tests.

16 CHRISTINE MAINVILLE: Okay. Would you
17 normally expect those to all be done together by
18 the same entity?

19 DR. ROGER WOODHEAD: It's best if it's
20 all done -- I'll come back to Canada Line again.
21 It's best if everything's in the same box.

22 CHRISTINE MAINVILLE: And would the
23 reason for these exclusions be the same one you
24 referenced earlier relating to MMM's hesitations or
25 reluctance to take on a --

1 DR. ROGER WOODHEAD: It was also that,
2 you know, there were negotiations on the -- on the
3 contract price for the engineering, and OLRTC were
4 reluctant to spend much money on engineering.
5 So -- so some items were left out of the scope, so
6 it wasn't just MMM's reluctance.

7 CHRISTINE MAINVILLE: Okay. I'll get
8 back to that. But would you not have expected
9 systems integration plans -- system integration
10 plans to be prepared much earlier in the project in
11 the normal course?

12 DR. ROGER WOODHEAD: Yeah, I think so.
13 I think that was a bit late.

14 CHRISTINE MAINVILLE: And to be clear,
15 these plans are not just about testing. Do they
16 involve some aspect of design? Or...

17 DR. ROGER WOODHEAD: No. These are
18 just test plans.

19 CHRISTINE MAINVILLE: They're just test
20 plans, okay.

21 DR. ROGER WOODHEAD: Yeah. So you
22 would -- you would list a bunch of items that you
23 wanted to be tested.

24 CHRISTINE MAINVILLE: Got it.

25 DR. ROGER WOODHEAD: And what the

1 pass/fail criteria was.

2 CHRISTINE MAINVILLE: And so you said
3 OLRTC was reluctant to spend much money on
4 engineering. Can you talk about that a bit? What
5 was their rationale, to the extent you know, for
6 that?

7 DR. ROGER WOODHEAD: They didn't want
8 to spend much money on engineering. It's not
9 unusual.

10 CHRISTINE MAINVILLE: And why is that
11 not unusual? Like, why engineering in particular?

12 DR. ROGER WOODHEAD: I think they don't
13 want to spend much money on anything. They -- they
14 like to -- they like to make a profit, I guess.

15 CHRISTINE MAINVILLE: And could this
16 have had to do with their level of expertise or
17 experience in respect of this type of system?

18 DR. ROGER WOODHEAD: I don't think -- I
19 don't really think so.

20 CHRISTINE MAINVILLE: Okay.

21 DR. ROGER WOODHEAD: I mean -- I mean,
22 SNC-Lavalin were working for OLRTC, so SNC-Lavalin,
23 part of OLRTC, had a lot of experience in systems,
24 systems integration.

25 CHRISTINE MAINVILLE: And what is your

1 basis for saying that there was such a reluctance?
2 Was it simply because the resources weren't there,
3 or do you have some other basis for saying that
4 they didn't want to spend the money on it or were
5 reluctant?

6 DR. ROGER WOODHEAD: So my basis is I
7 know -- although I wasn't involved in the
8 negotiations -- that the EJV initially gave a price
9 for engineering to OLRTC back in -- when would it
10 be? 2012? And OLRTC thought it was too high. And
11 the price was reduced, and some scope was taken out
12 of the EJV at that time. So that -- that I do
13 know.

14 CHRISTINE MAINVILLE: And what scope
15 would that have been?

16 DR. ROGER WOODHEAD: I think systems
17 scope was taken out.

18 CHRISTINE MAINVILLE: And what does
19 that mean?

20 DR. ROGER WOODHEAD: That -- that OLRTC
21 took on a larger role in systems. As I say, I
22 wasn't involved in these negotiations, and I don't,
23 quite frankly, know the exact details of -- of what
24 was taken out of the EJV's contract.

25 CHRISTINE MAINVILLE: Okay. But just

1 for explaining it to someone like me, what would
2 that mean, systems?

3 DR. ROGER WOODHEAD: That -- that
4 the -- the systems design -- I -- I mentioned, for
5 instance, and the catenary system. So the scope of
6 the EJV would be reduced such that design would
7 be -- only be taken to a certain level, and then a
8 subcontractor would take -- take over the design.
9 And also, the EJV's role in -- in doing inspections
10 and testing and things like that were also reduced.

11 CHRISTINE MAINVILLE: Okay.

12 DR. ROGER WOODHEAD: So the EJV would
13 take the systems designs to a certain level, and
14 then the OLRTC would hire a design-build contractor
15 to finish it off.

16 CHRISTINE MAINVILLE: I see. Okay. So
17 what you referenced earlier. And so it may be that
18 in another project, EJV or the engineering,
19 whomever is responsible for the systems
20 engineering, would take the designs to a more
21 complete level. But in this case, the reason that
22 was not done was because of this reduction in
23 scope?

24 DR. ROGER WOODHEAD: Yeah, I believe
25 so. Yeah. As I say, I wasn't involved in that

1 negotiation, but I'm fairly sure the scope was
2 reduced when the price was reduced.

3 CHRISTINE MAINVILLE: But you were
4 involved in the design of the --

5 DR. ROGER WOODHEAD: Right.

6 CHRISTINE MAINVILLE: -- system.

7 DR. ROGER WOODHEAD: Right.

8 CHRISTINE MAINVILLE: So your
9 understanding was that your scope was reduced?

10 DR. ROGER WOODHEAD: Right. And -- and
11 I think in particular, the number of people who
12 were on site during construction was -- was reduced
13 as -- that was part of the reduction in the
14 engineering, not just the design, but the presence
15 on site as well.

16 CHRISTINE MAINVILLE: For the EJV?

17 DR. ROGER WOODHEAD: Yeah.

18 CHRISTINE MAINVILLE: Okay. What
19 implications would that have from your perspective
20 on how this project would unfold?

21 DR. ROGER WOODHEAD: So I've said I
22 think a few times that I believe it's much better
23 if one company is responsible for everything.

24 CHRISTINE MAINVILLE: And do you have
25 insight into how OLRTC ended up delivering on

1 this -- this additional scope that the EJV didn't
2 take on?

3 DR. ROGER WOODHEAD: I don't have any
4 particular insight. I -- as I say, I know there
5 were -- you know, the things got added back in like
6 the system integration testing. But I -- I -- I
7 got -- I wasn't really involved in the project
8 after -- after I left, after 2015.

9 CHRISTINE MAINVILLE: Okay. Did the
10 EJV devise a systems engineering management plan?

11 DR. ROGER WOODHEAD: That's also a very
12 good question. You ask a lot of good questions, by
13 the way. I am sure we had some sort of system
14 engineering plan, yes.

15 CHRISTINE MAINVILLE: Do you know if it
16 would have been fully developed?

17 DR. ROGER WOODHEAD: Given our scope,
18 it would be fully developed for our scope.

19 CHRISTINE MAINVILLE: Right. So I
20 might ask your counsel just if you could undertake
21 to either produce or identify any such systems
22 engineering management plan?

23 U/T DR. ROGER WOODHEAD: Okay.

24 CHRISTINE MAINVILLE: Thank you.

25 U/T MR. VRANTSIDIS: Yes, we'll look into

1 that.

2 CHRISTINE MAINVILLE: I think you
3 mentioned in the earlier interview that OLRTC
4 always wanted to take charge of the rolling stock
5 and signalling system integration. Do you recall
6 that? Is that accurate?

7 DR. ROGER WOODHEAD: I'm not sure I
8 said they wanted to, but they realized it was in
9 their scope, not in the EJV's scope.

10 CHRISTINE MAINVILLE: Okay. And you've
11 said that previously that once OLRTC realized that
12 it was not in EJV's scope. So can you explain why
13 there could have been some late realization as to
14 scope in this project?

15 DR. ROGER WOODHEAD: Because -- here,
16 I'm guessing a little bit, by the way -- because
17 the people who would -- on the project were not
18 involved in the proposal.

19 CHRISTINE MAINVILLE: Okay. And
20 perhaps didn't --

21 DR. ROGER WOODHEAD: Sorry. Just to
22 clarify that, most of them were not.

23 CHRISTINE MAINVILLE: Okay.

24 DR. ROGER WOODHEAD: And I'd have to
25 think very hard to think of somebody who was. But

1 most people are not involved in the proposal.

2 CHRISTINE MAINVILLE: So what -- is
3 that typical that there's a transition and change
4 of teams after financial --

5 DR. ROGER WOODHEAD: Yeah. Yeah.

6 CHRISTINE MAINVILLE: So what's
7 typically done, if anything, to ensure that kind of
8 transfer of knowledge or transition?

9 DR. ROGER WOODHEAD: So -- so I've
10 worked on projects where there's been a so-called
11 interim project management team who will come in
12 from the bid team and stay on the project for a few
13 months to, let's say, train the new people in, you
14 know, what happened in the bid and what -- what the
15 proposal's all about.

16 But I would have to say, the one
17 project I've been involved where that happened was
18 a total disaster as well, so I'm not sure it's a
19 good solution.

20 CHRISTINE MAINVILLE: Okay.

21 DR. ROGER WOODHEAD: And the best
22 solution -- by the way, I think I've said this
23 before: Owners have wised up a little bit. Now
24 they have in the proposals, if you don't show -- if
25 your key people don't show up, you get fined. So

1 they have actually put a little bit of financial
2 teeth into the key people showing up.

3 So that's one thing that could be done.
4 You have this interim management team, or you --
5 you could try and keep the people involved at a
6 distance. But the -- I -- I -- that's all I can
7 say, really.

8 CHRISTINE MAINVILLE: So I take it on
9 this project, there was no provision made for an
10 interim management team?

11 DR. ROGER WOODHEAD: No.

12 CHRISTINE MAINVILLE: And there wasn't
13 one?

14 DR. ROGER WOODHEAD: I don't believe
15 so. I'd have to think hard, but I don't believe
16 so.

17 CHRISTINE MAINVILLE: And what about
18 key people as you've identified? Were there not
19 the key people involved on this project?

20 DR. ROGER WOODHEAD: So I think I
21 mentioned before when I look at the organization
22 chart from our proposal and you look at who showed
23 up and who didn't show up, there's a lot of people
24 missing.

25 CHRISTINE MAINVILLE: And that was

1 explained as I recall by the fact that the
2 Evergreen Line project was also ongoing at the same
3 time?

4 DR. ROGER WOODHEAD: Likely, but a lot
5 of the key people who didn't show up were not --
6 also didn't work for SNC-Lavalin, so why the other
7 partners' key people didn't show up, I have no
8 idea. But certainly, part of the reason for
9 SNC-Lavalin people not showing up was because they
10 were working on the Evergreen Line instead.

11 And it's -- it's a little bit
12 difficult -- when a company is making several bids,
13 they will try and name their best people in each
14 bid. And if they get more than one contract, they
15 can't supply somebody to several contracts. So
16 it -- it's not unusual.

17 CHRISTINE MAINVILLE: And who came in,
18 if not the SNC people, on the Confederation Line?

19 DR. ROGER WOODHEAD: They would -- they
20 hired outside people, people from a few -- some
21 people from Dragados, I think, came in that weren't
22 in the original bid. Some people who would -- with
23 experience who had not worked on the bid but
24 were kind of people who'd worked on other projects
25 with experience.

1 CHRISTINE MAINVILLE: And so when
2 you're talking about this issue relating to SNC,
3 that -- that is on the OLRTC side and not SNC as it
4 related to the Engineering Joint Venture?

5 DR. ROGER WOODHEAD: There was a little
6 bit of an issue with the engineering joint venture.
7 We basically had the people, but they were perhaps
8 not full time, and there might have been some
9 people that we didn't have available because of
10 Evergreen Line.

11 CHRISTINE MAINVILLE: Do you have a
12 view, having been a technical director on the
13 Canada Line, of the work performed by Mr. Roger
14 Schmidt who would have been OLRTC's technical
15 director?

16 DR. ROGER WOODHEAD: So I want to be
17 very frank with you here. Roger and I did not get
18 along. I had worked with him before. I worked
19 with him on Canada Line and other projects, and I
20 consider him very competent.

21 But for some reason, we didn't get
22 along on Confederation Line, and I don't really
23 want to comment on his competency. He's a
24 competent person.

25 CHRISTINE MAINVILLE: Okay. And do you

1 know about his experience with system integration?

2 DR. ROGER WOODHEAD: I would have
3 thought he didn't have much before Confederation
4 Line, but without reviewing his resume, I couldn't
5 tell you.

6 CHRISTINE MAINVILLE: Fair enough.

7 DR. ROGER WOODHEAD: On -- on Canada
8 Line, he was involved in -- in design management of
9 the elevated guideway which didn't involve system
10 integration. But he might have worked on another
11 contract where it did involve system integration.

12 CHRISTINE MAINVILLE: You mentioned
13 earlier that part of OLRTC's role was to
14 communicate the requirements for the rolling stock
15 and train control to the EJV. Were there any
16 challenges in that regard?

17 DR. ROGER WOODHEAD: Probably, but I
18 can't really remember any specific examples. I --
19 to be frank, I don't know that it was a big
20 problem. The -- I think we knew what the vehicle
21 and train control required from us.

22 CHRISTINE MAINVILLE: Okay.

23 DR. ROGER WOODHEAD: Maybe not exactly
24 everything, but I don't think it was a big issue.

25 CHRISTINE MAINVILLE: Okay. Do you

1 recall -- well, maybe you can just remind me of
2 your level of experience on rolling stock
3 specifically.

4 DR. ROGER WOODHEAD: Okay. So what
5 I -- what I told you before was I was not an expert
6 in rolling stock.

7 CHRISTINE MAINVILLE: Okay.

8 DR. ROGER WOODHEAD: I'm not an expert
9 in systems integration. My experience, a lot of it
10 comes from Canada Line where I was responsible for
11 all the technical issues. So through that --

12 COURT REPORTER: All the which, sir?
13 You said I was -- sorry -- I was responsible for
14 all the -- and I missed it.

15 DR. ROGER WOODHEAD: Technical issue.

16 COURT REPORTER: Thank you.

17 DR. ROGER WOODHEAD: So through that, I
18 gained some knowledge of vehicles and system
19 integration.

20 CHRISTINE MAINVILLE: Okay.

21 DR. ROGER WOODHEAD: But I'm a
22 structural engineer background.

23 CHRISTINE MAINVILLE: Got it. So do
24 you recall the requirements referencing the AMIRA
25 or -- standards?

1 DR. ROGER WOODHEAD: The who?

2 CHRISTINE MAINVILLE: A-M-I-R-A, I
3 believe, Standards.

4 DR. ROGER WOODHEAD: A-M-I-R-A.

5 CHRISTINE MAINVILLE: Not familiar?

6 DR. ROGER WOODHEAD: Is that the --

7 CHRISTINE MAINVILLE: I may have it
8 wrong. It may not be you. But --

9 DR. ROGER WOODHEAD: Is that for -- is
10 that for wheelchairs and things?

11 CHRISTINE MAINVILLE: So the -- well,
12 what I have here is for metal accounting, but --

13 DR. ROGER WOODHEAD: Who?

14 CHRISTINE MAINVILLE: That may be
15 wrong. I'll leave it. If it doesn't ring a bell,
16 that's fine. Do you know -- actually -- actually,
17 that does make sense that it's for metal
18 accounting.

19 Do you recall any concern or
20 discussions about the type of rail that was used
21 and it not being suitable -- or not suitable, but
22 it not being the type of rail that you might
23 normally use for a light rail vehicle?

24 DR. ROGER WOODHEAD: What I do recall
25 is early on, we had discussions as the EJV with

1 Alstom about what's called wheel-rail interaction,
2 and Alstom were very aware of the type of rail we
3 were using, and we were very aware of the type of
4 way of -- of wheel they were using. And our track
5 design is very, very competent.

6 So I, quite frankly, didn't know there
7 was a problem, and everybody knew from Day 1 what
8 type of rail we were using.

9 CHRISTINE MAINVILLE: Okay. And you
10 don't recall --

11 DR. ROGER WOODHEAD: I believe nobody
12 objected.

13 CHRISTINE MAINVILLE: Okay. You don't
14 recall Alstom raising any concerns?

15 DR. ROGER WOODHEAD: I don't recall
16 that, no.

17 CHRISTINE MAINVILLE: And to your
18 knowledge, is it a rail, the type of rail that was
19 used, is it one that is typically used for heavy
20 rail?

21 DR. ROGER WOODHEAD: I don't believe
22 so.

23 CHRISTINE MAINVILLE: Okay. Do you
24 have any sense of if the trains later encountered
25 vibration issues? Do you know what that could have

1 been related to?

2 DR. ROGER WOODHEAD: No. We -- we
3 did an -- we did an extensive noise and vibration
4 design with a very competent company to do that.
5 But that was mostly to make sure that the
6 vibrations did not affect adjacent buildings.

7 For instance, the line goes right next
8 to the CBC studios in downtown Ottawa, and we had
9 extensive discussion -- and also the National Arts
10 Centre. We had extensive discussions about
11 vibration and its impact on those buildings and
12 others, and I believe that we resolved those
13 problems. But I don't know whether that's what the
14 problem is. I -- I just don't know.

15 CHRISTINE MAINVILLE: Okay. Do you
16 recall any request made to relax the Canadian
17 content requirement for Alstom?

18 DR. ROGER WOODHEAD: No. During their
19 proposal and because we -- we had decided we were
20 going to do the final assembly in the maintenance
21 facility, I don't believe there would have been a
22 problem with the Canadian content, but maybe later
23 on there was. I don't know.

24 CHRISTINE MAINVILLE: Okay. So you
25 don't recall, very early on in the project,

1 approaching the City about that or whether the
2 Province was approached about that?

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

4 CHRISTINE MAINVILLE: Okay.

5 DR. ROGER WOODHEAD: When you say early
6 in the project, that's after the award?

7 CHRISTINE MAINVILLE: After award, yes.

8 DR. ROGER WOODHEAD: Yeah. No. I
9 wouldn't have been involved in that at all.

10 CHRISTINE MAINVILLE: Because you
11 weren't involved in the rolling stock?

12 DR. ROGER WOODHEAD: Right. Yeah.

13 CHRISTINE MAINVILLE: Got it. Were you
14 working off preliminary designs from the City or
15 more specifically Capital Transit Partners?

16 DR. ROGER WOODHEAD: Yes. We've -- we
17 were given the -- let's call it the concept design
18 as part of the RFP, and we based our design off
19 that, yes.

20 CHRISTINE MAINVILLE: And do you have
21 any views about their work or those designs?

22 DR. ROGER WOODHEAD: Not really. I
23 think we thought we could optimise it, but we
24 didn't really make massive changes to it.

25 CHRISTINE MAINVILLE: Okay.

1 DR. ROGER WOODHEAD: But we changed the
2 design of the tunnel. We changed the design of the
3 length of the platforms, but I -- no, we -- we made
4 huge changes. We -- we made changes to the design
5 of the look of the stations to make them as we
6 thought more -- more apt for this type of project.

7 But I -- I don't -- yeah, that was --
8 that was an -- I think that was an issue we had.
9 The design of the stations in the reference concept
10 we thought could be optimised. And when I say
11 optimised, it doesn't mean necessarily to make
12 cheaper but look better.

13 CHRISTINE MAINVILLE: Did any aspects
14 of the design require enhanced maintenance, like,
15 anything that stands out about the design and how
16 that might have impacted maintenance requirements?

17 DR. ROGER WOODHEAD: Not that I know
18 of. But in the -- in the RFP, the maintenance
19 people were involved with the design because they
20 had to -- you know, they had to make a proposal on
21 what the costs and the maintenance would be and
22 things like that. So they had some input into the
23 design, quite a bit of input if I remember.

24 But after the proposal was awarded --
25 after the contract was awarded, I don't recall any

1 great discussions. There might have been that I've
2 forgot.

3 CHRISTINE MAINVILLE: Okay. What were
4 the original plans for the MSF, and did those
5 evolve during your involvement on the project?

6 DR. ROGER WOODHEAD: That's another
7 good question. So one thing we had to do with the
8 MSF was we had to modify the design a little bit so
9 that the vehicles -- the final assembly of the
10 vehicles could be made inside the MSF.

11 So from my memory, we added some
12 temporary walls and some temporary things so that
13 that was possible. So vehicles could be assembled
14 at the same time other vehicles were being
15 maintained.

16 We originally came up with the idea
17 that the -- the yard, the space outside the MSF
18 where the vehicles were stored would be -- wouldn't
19 require drivers. It would be driverless. And I
20 believe at the end of the day, the drivers operate
21 the trains in the yard, so that would be another
22 change. But I -- I don't quite honestly remember
23 when that happened or whether I knew of it.

24 CHRISTINE MAINVILLE: And what was the
25 significance of the yard being automated in terms

1 of, you know, do you see any impact of it not being
2 automated ultimately?

3 DR. ROGER WOODHEAD: So the obvious
4 impact of it being automated is you need fewer
5 people. So the costs are lower. And I'm a little
6 bit biased here, but I believe an automated system
7 is a bit safer and a bit more reliable than a
8 vehicle -- than a system with drivers.

9 That maybe doesn't sound logical to
10 you, but I think it's been shown that computers act
11 faster than drivers do, so I believe they're a
12 little bit safer.

13 So perhaps a fact that the yard was
14 not -- that there were drivers operating the
15 vehicles in the yard would -- would lead to more
16 accidents, I -- I don't know.

17 CHRISTINE MAINVILLE: And why do you
18 say you may be a bit biased on that?

19 DR. ROGER WOODHEAD: I -- I think -- I
20 go back to Canada Line, my old friend Canada Line,
21 which is automated. There's no drivers, and it
22 works very well. And I think there's lots of --
23 lots of experience that shows that driverless
24 systems operate very well.

25 CHRISTINE MAINVILLE: And so do you

1 recall whether the MSF initially was supposed to be
2 only a maintenance facility, and then was it when
3 Alstom came in that it had to be accommodated
4 for -- or adapted to also be an assembly facility?

5 DR. ROGER WOODHEAD: So I remember that
6 very well because I was involved in that decision
7 and -- and pushing that a little bit that it
8 would -- it would enhance our proposal if there was
9 more work that could be done in Ottawa rather than
10 in the U.S.

11 So I was very involved in -- in trying
12 to make sure that the MSF could both assemble the
13 vehicles and act as a maintenance facility, yes.

14 CHRISTINE MAINVILLE: So would that
15 have also been part of the discussion with CAF or
16 only with Alstom?

17 DR. ROGER WOODHEAD: I think -- I
18 believe it was only with Alstom that we didn't
19 discuss that with CAF. But both of them, all the
20 suppliers that we got proposals from said that they
21 could meet the Canadian content requirements
22 without assembling the vehicles in Ottawa. All of
23 them said that.

24 CHRISTINE MAINVILLE: But for Alstom,
25 that was at least a more obvious way to do it?

1 DR. ROGER WOODHEAD: Yes. And that --
2 that gave them more flexibility in where their --
3 where their suppliers came from.

4 CHRISTINE MAINVILLE: And it gave them
5 more flexibility?

6 DR. ROGER WOODHEAD: Yes.

7 CHRISTINE MAINVILLE: And why is that?

8 DR. ROGER WOODHEAD: So -- so if -- if
9 you didn't assemble the vehicles in Ottawa, you
10 would have to have more Canadian content in the
11 vehicle itself.

12 CHRISTINE MAINVILLE: Right. Okay.
13 And you -- you said your understanding was that it
14 would enhance the proposal to have assembly in
15 Ottawa. That was your understanding from the City?

16 DR. ROGER WOODHEAD: No. It was my
17 understanding from, I guess, just thinking about
18 it, that, for something to be -- actually, some
19 labour to be supplied in Ottawa and some technology
20 to be transferred to Ottawa would make it more --
21 more acceptable, let's say, to the City.

22 CHRISTINE MAINVILLE: And so it wasn't
23 just about --

24 DR. ROGER WOODHEAD: As long as it
25 didn't increase the price, by the way.

1 CHRISTINE MAINVILLE: Right. So it
2 wasn't just about the Canadian content. It was
3 about specifically assembly in Ottawa that you --

4 DR. ROGER WOODHEAD: It was about --
5 yes. It was about Ottawa content.

6 CHRISTINE MAINVILLE: So is that
7 something you advocated for or that you -- that you
8 brought to the table or you thought was --

9 DR. ROGER WOODHEAD: I don't know if I
10 brought it to the table, but I certainly advocated
11 for it. If somebody else brought it to the table,
12 I supported it very much. It was part of -- part
13 of, let's call it, marketing.

14 CHRISTINE MAINVILLE: Okay. Did you at
15 that time see any risks with the available
16 knowledge, as you've termed it, or -- and skills or
17 labour expertise or experience in Ottawa and
18 whether that might pose a challenge?

19 DR. ROGER WOODHEAD: So I -- I don't
20 recall, but I'm sure we would have thought about
21 whether there would be sufficient people in Ottawa
22 who could do this work. And I don't recall now why
23 we had decided there would be.

24 There may be -- I don't know what else
25 has been manufactured in Ottawa or nearby or that

1 Alstom felt they could train the people. I -- I
2 don't recall quite honestly. It was -- it was
3 not -- it was not something that Alstom had a
4 problem with.

5 CHRISTINE MAINVILLE: Okay. And would
6 you be aware of whether any challenges were had
7 ultimately in that regard?

8 DR. ROGER WOODHEAD: No.

9 CHRISTINE MAINVILLE: Okay. So having
10 not been involved, I guess, in the rolling stock
11 after the award of the project, I take it you don't
12 have a view about whether the MSF ultimately was a
13 suitable facility for the train assembly?

14 DR. ROGER WOODHEAD: I don't. No, I
15 don't have a view whether it -- no. I -- I have a
16 view that during the bid, we thought it was, so I'd
17 be probably as I say, again, a bit biased to think
18 it would be good.

19 CHRISTINE MAINVILLE: True. And what
20 was the original plan if you recall for the test
21 track or what would be used as a test track?

22 DR. ROGER WOODHEAD: Okay. So the test
23 track was the track between the maintenance
24 facility and Blair station. I don't know if it was
25 the full length of the alignment there or just part

1 of it. But the idea was the vehicles would be
2 assembled in the maintenance facility. They would
3 come out onto the -- onto the main line through the
4 connector line there, and they would be tested
5 immediately on the portion to the -- I can't
6 remember if it's to the west or the east, but
7 towards Blair station.

8 Why that part of the line was chosen
9 rather than the other direction, I don't recall
10 now, but it may have been faster to build that
11 section.

12 CHRISTINE MAINVILLE: And so was it
13 always the plan that that portion of the track
14 between the MSF and --

15 DR. ROGER WOODHEAD: Yeah.

16 CHRISTINE MAINVILLE: -- Blair would be
17 used? Okay.

18 DR. ROGER WOODHEAD: Yeah. Yeah. As
19 far as I know, yeah.

20 CHRISTINE MAINVILLE: Okay. And do you
21 recall --

22 DR. ROGER WOODHEAD: And -- and by the
23 way, just -- just to -- just to clarify on that, I
24 remember that the priority for building the
25 stations was changed. After the contract was

1 awarded, the stations between -- the stations out
2 towards Blair were -- were -- were to be designed
3 and constructed before the other stations.

4 So -- so it would maybe initially, it
5 was in the other direction, but definitely, because
6 of the priority of the stations would change, it
7 was definitely the test track was towards Blair
8 station.

9 CHRISTINE MAINVILLE: Do you know why
10 that changed?

11 DR. ROGER WOODHEAD: No.

12 CHRISTINE MAINVILLE: Were --

13 DR. ROGER WOODHEAD: And -- and to be
14 honest, I don't know if it was changed.

15 CHRISTINE MAINVILLE: Okay.

16 DR. ROGER WOODHEAD: I don't recall
17 discussions during the proposal stage of where the
18 test track would be.

19 CHRISTINE MAINVILLE: Okay. In terms
20 of the testing and commissioning plans following, I
21 guess, the change of scope that the EJV did, would
22 there have been planning for winter testing? Would
23 that have been part of what EJV looked at?

24 DR. ROGER WOODHEAD: Yeah. I believe
25 the original schedule was to do the winter testing

1 fairly soon after the vehicles arrived on site.
2 And I can't recall now, but perhaps there would be
3 two winters in the testing plan.

4 CHRISTINE MAINVILLE: And --

5 DR. ROGER WOODHEAD: So the first few
6 vehicles would be tested in the first few winter --
7 and all the vehicles tested in the same winter. I
8 don't recall exactly, but I believe there was a
9 plan to maximize the amount of winter testing
10 during the RFQ -- RFP, sorry.

11 CHRISTINE MAINVILLE: So that was
12 dynamic testing on the line?

13 DR. ROGER WOODHEAD: Yeah.

14 CHRISTINE MAINVILLE: And that was
15 specific, not just we're going to perform tests on
16 the line during the winter, but were they
17 specifically geared towards winter testing?

18 DR. ROGER WOODHEAD: Yeah.

19 CHRISTINE MAINVILLE: And is your view
20 that the winter testing that was planned would have
21 sufficed?

22 DR. ROGER WOODHEAD: When we're --
23 during the RFP, yeah. Yeah.

24 CHRISTINE MAINVILLE: And am I right
25 that you said you were not involved with devising

1 any plans for integration testing as it relates to
2 the rolling stock and integration into the -- not
3 just the signalling system but the infrastructure,
4 the SITs?

5 DR. ROGER WOODHEAD: The SITs, I think
6 I -- I read something out from the SIT. Sorry.
7 It's -- it's buried under here now.

8 MICHAEL VRANTSIDIS: Roger, just
9 checking in to see if you need a break at all.

10 CHRISTINE MAINVILLE: I was going to
11 stop. That was my last question.

12 MR. VRANTSIDIS: Oh.

13 CHRISTINE MAINVILLE: Because I
14 think --

15 DR. ROGER WOODHEAD: Oh, here we go.
16 Here we go. Hang on. It's right here.

17 CHRISTINE MAINVILLE: Okay.

18 DR. ROGER WOODHEAD: So what did I find
19 here? That vehicle and signalling tests are not
20 included it says.

21 CHRISTINE MAINVILLE: Right. That's
22 what I thought you said. Okay. So you, you didn't
23 plan anything in terms of trial running -- you or
24 the EJV -- trial running or the rolling stock
25 systems integration system?

1 DR. ROGER WOODHEAD: I'd be very
2 surprised if the EJV was involved in trial running
3 at the end, but I wasn't there, so...

4 CHRISTINE MAINVILLE: Okay. Okay.
5 Those are my questions. I'll just check if my
6 co-counsel, Ms. Murynka, has any follow-up
7 questions?

8 DANIELLA MURYNKA: I don't. I don't,
9 no. Thanks.

10 CHRISTINE MAINVILLE: Michael or Mannu,
11 anything you wanted to ask in follow-up?

12 MANNU CHOWDHURY: No question from me.

13 MICHAEL VRANTSIDIS: And none from
14 myself either.

15 CHRISTINE MAINVILLE: So let's go off
16 record, unless, Roger, was there anything you
17 wanted to add that I didn't touch on?

18 DR. ROGER WOODHEAD: No.

19 CHRISTINE MAINVILLE: Okay. We'll go
20 off record.

21 (DISCUSSION OFF THE RECORD)

22 -- Whereupon the Examination concluded
23 at 5:02 p.m.

24

25

1 REPORTER'S CERTIFICATE

2
3 I, JANET BELMA, CSR, Certified
4 Shorthand Reporter, certify;

5 That the foregoing proceedings were
6 taken before me at the time and place therein set
7 forth, at which time the witness was put under
8 oath;

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

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

15
16 Dated this 18th day of May, 2022.

17
18
19 

20 _____
21 NEESONS COURT REPORTING INC.

22 PER: JANET BELMA, CSR
23
24
25

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