

Ottawa Light Rail Commission

Desmond Ng
on Monday, May 2, 2022



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6	OTTAWA LIGHT RAIL COMMISSION
7	THALES CANADA INC. - DESMOND NG
8	MAY 2, 2022
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13	--- Held via Zoom Videoconferencing, with all
14	participants attending remotely, on the 2nd day of
15	May, 2022, 2:04 p.m. to 4:21 p.m.
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COMMISSION COUNSEL:

Christine Mainville, Co-Lead Counsel Member

Anthony Imbesi, Litigation Counsel Member

PARTICIPANTS:

Desmond Ng, Thales Canada Inc.

Maria Braker & Peter Mantas, Fasken Martineau

DuMoulin LLP

ALSO PRESENT:

Joanne Lawrence, Stenographer/Transcriptionist

Laila Butt, Virtual Technician

1 -- Upon commencing at 2:04 p.m.

2 CHRISTINE MAINVILLE: The purpose of
3 today's interview is to obtain your evidence under
4 oath or solemn declaration for use at the
5 Commission's public hearings. This will be a
6 collaborative interview such that my cocounsel,
7 Mr. Imbesi, may intervene to ask certain questions.
8 If time permits, your counsel may also ask
9 follow-up questions at the end of the interview.

10 The interview is being transcribed, and
11 the Commission intends to enter the transcript into
12 evidence at the Commission's public hearings,
13 either at the hearings themselves or by way of
14 procedural order before the hearings commence. The
15 transcript will be posted to the Commission's
16 public website, along with any corrections made to
17 it, after it is entered into evidence. The
18 transcript, along with any corrections, will be
19 shared with the Commission's participants and their
20 counsel on a confidential basis before being
21 entered into evidence. You'll be given the
22 opportunity to review the transcript and correct
23 any typos or other errors before the transcript is
24 shared with the participants or entered into
25 evidence. Any non-typographical corrections made

1 will be appended to the transcript.

2 And finally, pursuant to Section 33(6)
3 of the Public Inquiries Act, 2009:

4 "A witness at an inquiry shall
5 be deemed to have objected to answer
6 any question asked of him upon the
7 ground that his answer may tend to
8 incriminate the witness or may tend
9 to establish his liability to civil
10 proceedings at the instance of the
11 Crown or of any person, and no
12 answer given by a witness at an
13 inquiry shall be used or be
14 receivable in evidence against him
15 in any trial or other proceedings
16 against him thereafter taking place,
17 other than a prosecution for perjury
18 in giving such evidence."

19 And as required by Section 33(7) of the Act, you
20 are advised that you have the right to object to
21 answer any question under Section 5 under of the
22 Canada Evidence Act. Okay?

23 DESMOND NG: Okay. M-hm.

24 CHRISTINE MAINVILLE: Okay. So we can
25 commence. Could you first explain your involvement

1 in Stage 1 of Ottawa's LRT project.

2 DESMOND NG: My role is the bid manager
3 on behalf of Thales Canada Transportation
4 Solutions, TCTS. My role is prepare the bid
5 deliverables; which are technical, commercial, and
6 price; and coordinate internally with Thales's
7 functional departments to collect estimates and
8 risks, et cetera; and then also support -- we have
9 a number of internal gates for -- which are usually
10 bid or no-go presentations with our senior
11 management; and then also to work with the capture
12 lead, the Ottawa LRT capture lead, on behalf of
13 Thales in the preparation and submission of the
14 documents. So I was involved in the Ottawa LRT
15 bid, Phase 1, from December 2011 to approximately
16 April 2013.

17 CHRISTINE MAINVILLE: Okay. And I
18 might just pause because your video is frozen, even
19 though your audio is fine. Do you know if you're
20 able to restart that, the video?

21 DESMOND NG: The video... It looks
22 okay from my end.

23 CHRISTINE MAINVILLE: Let's go off
24 record for a sec.

25 -- OFF THE RECORD DISCUSSION --

1 CHRISTINE MAINVILLE: Okay. So --

2 DESMOND NG: Where did I leave you?

3 CHRISTINE MAINVILLE: So you were
4 involved until April 2013. Did you have any --

5 DESMOND NG: Correct.

6 CHRISTINE MAINVILLE: -- further
7 involvement after that on the project?

8 DESMOND NG: No. Once I handed over --
9 in a typical Thales process, once I -- the bid is
10 awarded to Thales, I hold a hand-over meeting,
11 which occurred, I think, on April 22, 2012, to the
12 Thales Ottawa project team. So I hand over all the
13 contract documents, decisions, and estimates and
14 price, and after that, my involvement on the
15 project is hands-off. So anything that happens
16 after with the project, including changes in scope,
17 is with the project team.

18 CHRISTINE MAINVILLE: And you said
19 2012, I think, but do you mean April 2013?

20 DESMOND NG: Yeah, I'm sorry. April --
21 yeah, handed over on April 22, 2013. Sorry.

22 CHRISTINE MAINVILLE: And so were you
23 involved in the contract negotiations?

24 DESMOND NG: For this bid, no. The
25 answer is no. But normally I do on other bids.

1 It's just that I was pulled off during the
2 negotiation phase by my boss to work on some other
3 bids, so...

4 CHRISTINE MAINVILLE: Okay. So do you
5 know who took care of that for Thales?

6 DESMOND NG: It was the capture leader,
7 Mr. Mario Peloquin, who is no longer with us, and
8 then I believe a couple of the technical team in
9 the Toronto office. I'm based in Vancouver, so...

10 CHRISTINE MAINVILLE: And was
11 Mr. Dooyerweerd, Paul Dooyerweerd, involved in the
12 bid?

13 DESMOND NG: I believe Paul was
14 involved in negotiations, yes.

15 CHRISTINE MAINVILLE: Okay.

16 DESMOND NG: But I don't -- to exactly
17 what was in the negotiations, I wasn't there, so I
18 don't -- I don't have any record of meetings or
19 minutes.

20 CHRISTINE MAINVILLE: Okay. Could you
21 tell us a bit about your prior experience and
22 background.

23 DESMOND NG: Yes. I have a computer
24 science degree from University of British Columbia,
25 over 40 years of working experience in software

1 engineering, project management, and business
2 management. The past 18 years, I've been in bids
3 and proposals with Thales, and I've been with
4 Thales Canada for the past 25 years. I've worked
5 over -- probably, in bids and proposals, over
6 90-plus bids worldwide and -- and at various
7 industrial organizations, such as joint ventures,
8 consortium, prime, co-contractor, and
9 subcontractors organizations, so...

10 CHRISTINE MAINVILLE: So are you
11 usually involved in the procurement phase or also
12 in the --

13 DESMOND NG: Yes, always in the
14 procurement phase, from -- usually, depending on
15 the tender, from prequalification, RFP, question
16 and answers, BAFO negotiations, and final contract.

17 CHRISTINE MAINVILLE: Okay.

18 DESMOND NG: Yeah.

19 CHRISTINE MAINVILLE: And were you --
20 have you been involved with other companies that
21 provide signalling systems other than Thales?

22 DESMOND NG: You mean as a competitor?

23 CHRISTINE MAINVILLE: Yes, any
24 competitor.

25 DESMOND NG: Yes. We always run in --

1 in all the work we do, it's usually the three or
2 four big ones: Alstom Signalling, Siemens
3 Signaling, Hitachi Rail signalling, and there used
4 to be Bombardier, but they're out of it now, so the
5 remaining is usually Siemens and Alstom signalling
6 systems.

7 CHRISTINE MAINVILLE: So -- sorry. So
8 you've worked with them on projects --

9 DESMOND NG: No, not with them.
10 They're a competitor.

11 CHRISTINE MAINVILLE: Okay.

12 DESMOND NG: So we would submit a bid.
13 They would submit a --

14 CHRISTINE MAINVILLE: Right.

15 DESMOND NG: -- competitive bid. Yeah.

16 CHRISTINE MAINVILLE: Okay. So what
17 I'm wondering is if you've ever worked for another
18 company that provides systems like this or only for
19 Thales.

20 DESMOND NG: Oh, no, only Thales.

21 CHRISTINE MAINVILLE: Okay. And are
22 you an engineer?

23 DESMOND NG: Yes, computer science.

24 CHRISTINE MAINVILLE: Okay. And have
25 some of your other projects involved P3s? Have

1 they been P3s?

2 DESMOND NG: Yes. I've worked on a
3 number of bids in Vancouver, Vancouver Evergreen
4 Line and Vancouver Broadway Subway Project. Those
5 were P3s with the Province of B.C. So funding came
6 from three parties, tri-party: the Province of
7 B.C., the Ministry of Transportation, and then the
8 local regional authority. Sorry, the -- not -- the
9 awarded proponent.

10 CHRISTINE MAINVILLE: Okay. And we've
11 discussed this ahead of the interview, but you'll
12 undertake to produce your résumé for us?

13 PETER MANTAS: Yes.

14 DESMOND NG: Yes, yeah.

15 CHRISTINE MAINVILLE: Thank you. Were
16 you involved at all in industry consultations in
17 the pre-bid period here?

18 DESMOND NG: For Ottawa LRT?

19 CHRISTINE MAINVILLE: Yes.

20 DESMOND NG: No, no.

21 CHRISTINE MAINVILLE: Okay. Can you
22 tell us -- perhaps start with giving us an overview
23 of how the procurement unfolded as it relates to
24 Stage 1 of Ottawa's LRT, from Thales's perspective.

25 DESMOND NG: Okay. Around February

1 8th, 2011, there was a what we call Gate 1, and
2 this is an internal meeting. It's a go/no-go
3 decision for senior management to -- shall we
4 pursue the Ottawa LRT opportunity? So the decision
5 at that time, on February 8th, 2011, was a go:
6 Yes, we will talk with proponents to go after the
7 Ottawa LRT Phase 1 bid.

8 Then around the December time frame, we
9 were in -- then started discussions with two
10 proponents, Bouygues Travaux and also SNC-Lavalin,
11 and we submitted prequalification documents to both
12 companies at that time. And so it wasn't -- it
13 wasn't to select one. We wanted to go with as many
14 consortiums as possible to increase our odds of
15 winning as a subcontractor for signalling.

16 On February 14, 2012, Bouygues sent us
17 their signalling RFP package, and similarly, on
18 March 19, 2012, SNC-Lavalin sent their
19 subcontracting signalling package to us to
20 complete.

21 CHRISTINE MAINVILLE: Okay.

22 DESMOND NG: So this is the formal RFP
23 now.

24 CHRISTINE MAINVILLE: Okay.

25 DESMOND NG: And then during -- around

1 March, April time frame, we submitted a number
2 of -- three offers to Bouygues on the RFP package,
3 and then after -- the last one was around I think
4 March or April time frame of 2012, and then after
5 that, it was all discussions with SNC-Lavalin, so
6 either Bouygues dropped us or we -- they went with
7 someone else. I don't know why, but we just
8 continued with SNC afterwards, starting from April
9 16th, 2012, which was a first initial offer to
10 SNC-Lavalin, and the offer would be the -- a
11 commercial -- the price and the technical for the
12 base offer at this point. The -- later on would be
13 the maintenance offer. And so from April 2012 all
14 the way down to around August 2012, there were a
15 number of submittals by Thales, and they -- there
16 was price changes, scope changes, discussions,
17 options, and finally the maintenance -- 30-year
18 maintenance offer.

19 CHRISTINE MAINVILLE: So the
20 maintenance, was that for the entire system?

21 DESMOND NG: The signalling.

22 CHRISTINE MAINVILLE: For just the
23 signalling system. Okay.

24 DESMOND NG: It was only -- yeah. Only
25 the signalling portion, yes.

1 CHRISTINE MAINVILLE: And who would --
2 who was the proposed vehicle provider for -- in
3 relation to each of these offers to SNC or -- and
4 Bouygues, or is that not something Thales would
5 concern itself with?

6 DESMOND NG: At the beginning, with
7 Bouygues, we didn't know, and we never did find out
8 because they stopped communication with us. And
9 for Alstom, on our initial offers, we didn't know
10 until around middle -- I think it was around
11 April -- August 29, 2012. That's when we started
12 discussions with Alstom, and so we started scope
13 split between our signalling system with the
14 interfaces to the Alstom vehicles.

15 CHRISTINE MAINVILLE: Okay. What did
16 you know about what the City's requirements were -
17 like, the key requirements for the signalling
18 system - at that point in time?

19 DESMOND NG: Yes, because they were
20 flown -- flown down to us by SNC-Lavalin.

21 CHRISTINE MAINVILLE: And what were the
22 key -- do you recall what the key requirements were
23 that had to be met?

24 DESMOND NG: Well, the -- no, there
25 were many, and we had a compliance matrix, so there

1 were hundreds of doc -- of requirements, and we had
2 to actually provide a -- our compliance to those
3 requirements for signalling. And our compliance
4 matrix, Thales's compliance matrix, was part of our
5 bid deliverables to SNC-Lavalin.

6 CHRISTINE MAINVILLE: Did you
7 understand that SNC was part of a consortium at
8 that point?

9 DESMOND NG: Yes, that's correct.
10 Yeah.

11 CHRISTINE MAINVILLE: Was that the RTG
12 consortium?

13 DESMOND NG: Yes. I believe so, yeah.

14 CHRISTINE MAINVILLE: So Thales didn't
15 formally put forward a bid on -- in respect of
16 another consortium, or it did on Bouygues?

17 DESMOND NG: Only two, right? The
18 original was Bouygues.

19 CHRISTINE MAINVILLE: Okay.

20 DESMOND NG: And then SNC-Lavalin.

21 CHRISTINE MAINVILLE: Okay.

22 DESMOND NG: At prequal and also RFP
23 phase, to both consortiums.

24 CHRISTINE MAINVILLE: Okay.

25 PETER MANTAS: Christine, did you

1 get -- I just want to make sure you got clarity on
2 that. I may have misunderstood your question. I
3 think you may have -- because remember Desmond also
4 said that at some point Bouygues also was not --
5 they were not part of that bid. I'm not sure if
6 you meant to say -- you know, you were referring to
7 the prime as opposed to the sub. So I just wanted
8 to raise that because when I listened to that
9 question and answer, I think there may have been
10 just been a lack of clarity about it, and I just --

11 CHRISTINE MAINVILLE: Sure. Well --

12 PETER MANTAS: -- for your sake --
13 sorry to interrupt, but I just thought --

14 CHRISTINE MAINVILLE: No, no, that's
15 fair.

16 PETER MANTAS: -- it would be better to
17 just deal with it now.

18 CHRISTINE MAINVILLE: My understanding
19 is you are unclear about whether you guys dropped
20 out or Bouygues decided to not go with Thales. Is
21 that -- am I wrong?

22 DESMOND NG: Yes, yeah. The -- we
23 submitted three offers to Bouygues, and the last
24 one was on March 28th, 2012, and it stopped. So we
25 did three offers on -- to Bouygues: March 16, March

1 21, March 28. After that, there was no further
2 communication. I don't know why. Maybe the -- our
3 capture lead knew. Maybe Bouygues dropped us; they
4 went with another signalling supplier. I don't
5 know why, so -- and --

6 PETER MANTAS: And, Christine, just to
7 be clear, in other words, Thales was only on one --

8 CHRISTINE MAINVILLE: Yeah.

9 PETER MANTAS: -- bid to the City.

10 CHRISTINE MAINVILLE: To the City.

11 PETER MANTAS: So it wasn't on multiple
12 bids in the end.

13 CHRISTINE MAINVILLE: Yeah.

14 PETER MANTAS: Okay.

15 CHRISTINE MAINVILLE: Okay. Could you
16 tell me how -- or if you know, if you were
17 involved, how the communication started with SNC,
18 whether it -- whether Thales approached SNC or vice
19 versa or how that came about.

20 DESMOND NG: I personally don't know.
21 It's with our capture leader, because he -- he's
22 responsible to win the bid overall, so I -- I -- I
23 guess originally he went to the consortium to
24 approach them, that we have a made-in-Canada
25 solution, right? We're the -- we have many

1 systems, signaling system running for different
2 signaling customers, so --

3 CHRISTINE MAINVILLE: Okay --

4 DESMOND NG: -- to prove ourselves,
5 that -- I guess basically, you know, to hedge
6 our -- win our -- improve our chances, he went to
7 both consortiums, but he was the interface to those
8 consortiums. I did not communicate at all.

9 CHRISTINE MAINVILLE: Okay. So do you
10 have -- sorry, we're having a bit of audio issues,
11 I think, but... Okay. Do you know whether SNC was
12 in discussions with any other signalling system
13 provider?

14 DESMOND NG: I personally don't know.

15 CHRISTINE MAINVILLE: Okay.

16 DESMOND NG: No.

17 CHRISTINE MAINVILLE: Do you know
18 whether SNC was already in discussions with Alstom
19 as the vehicle supplier or when it --

20 DESMOND NG: When we -- we only found
21 out after we submitted our bids that SNC said they
22 were going with Alstom, and so they wanted Alstom
23 and us to communicate on the -- on the interfaces
24 between our signalling system and the vehicle. So
25 at that point, we knew they pretty well selected

1 Alstom as their preferred vehicle supplier.

2 CHRISTINE MAINVILLE: Do you have any
3 knowledge of SNC or OLRTC, which was the consortium
4 it was part of, first going with CAF as a vehicle
5 provider?

6 DESMOND NG: The Spanish company? No.
7 I personally don't know, no.

8 CHRISTINE MAINVILLE: You had no
9 knowledge of that. Okay.

10 DESMOND NG: Yeah.

11 CHRISTINE MAINVILLE: So there were
12 never discussions between CAF and Thales.

13 DESMOND NG: Correct.

14 CHRISTINE MAINVILLE: Do you recall
15 whether Alstom entered the picture fairly late in
16 the day? When you were notified that Alstom would
17 be the vehicle provider, was that pretty late in
18 the process?

19 DESMOND NG: No, because we did prequal
20 to both companies, and they both were in the same
21 time frame, around March 2012.

22 CHRISTINE MAINVILLE: So you mean
23 Thales did prequalifications for Bouygues and SNC
24 around that time.

25 DESMOND NG: Yeah, yeah. So we already

1 knew both were already in the game at that time.

2 CHRISTINE MAINVILLE: Do you recall who
3 you were interacting with on SNC's side of things?

4 DESMOND NG: No. It -- I wasn't
5 personally involved, but I know the technical team
6 was on -- sorry, what was the question again,
7 please?

8 CHRISTINE MAINVILLE: If -- like, who
9 was your counterpart at SNC, if you recall?

10 DESMOND NG: That I don't know.

11 CHRISTINE MAINVILLE: That you would --
12 the main --

13 DESMOND NG: I -- oh, you mean, like,
14 bid-manager-wise? No, I never spoke to
15 SNC-Lavalin's -- oh, no. There was -- we submitted
16 our package to a person -- it was the Vancouver
17 SNC-Lavalin, SNC Western Constructors, in downtown
18 Vancouver. So I did see some correspondence there,
19 yeah, that we submitted our offer to that -- to the
20 SNC office in Vancouver.

21 CHRISTINE MAINVILLE: And did you meet
22 with the City directly at any point in time?

23 DESMOND NG: No, no. I've never met
24 the City. And I've never met any of the consortium
25 members personally, myself.

1 CHRISTINE MAINVILLE: Do you know if
2 Thales met with the City at all during the --

3 DESMOND NG: Personally, I don't -- I
4 don't know. I -- to be honest, I'm not too sure.
5 I'm just subjectively saying -- we were
6 subcontract, so we prob -- a subcontractor. I
7 doubt we were authorized to speak to the City.

8 CHRISTINE MAINVILLE: Okay. So
9 there -- when there were -- I want to call this the
10 right thing -- there were vehicle design
11 consultations with the City, the signalling system
12 provider would not have been part of that.

13 DESMOND NG: If there were technical
14 meetings - I don't know - we could have been there,
15 but I wasn't present.

16 CHRISTINE MAINVILLE: Okay. And so you
17 said that -- was it SNC wanted you to meet with
18 Alstom? Wanted Thales to --

19 DESMOND NG: Yes, for the -- for the --
20 especially the onboard, the signalling portion of
21 on the trains and specifically on the interfaces
22 from our system with the rolling stock. Yeah.

23 CHRISTINE MAINVILLE: And we're talking
24 about SNC. Was your understanding that you were
25 always dealing with SNC in terms of the partners on

1 the consortium?

2 DESMOND NG: Yes, only SNC. Yes.

3 CHRISTINE MAINVILLE: Okay. So they
4 were the ones effectively -- in terms of the
5 consortium, they were the ones dealing with the
6 signalling system --

7 DESMOND NG: Correct, yes, yeah. We
8 did not deal with any other of the consortium
9 members.

10 CHRISTINE MAINVILLE: Okay. And so
11 when did you meet with Alstom about the interface?

12 DESMOND NG: I don't have a record
13 when -- of those meetings. All I have is what we
14 sent in our bid submittals, which included a
15 Thales/Alstom vehicle scope split, and that -- when
16 we did the submittal at that time, that was on
17 August 29, 2012, so I would assume it -- maybe
18 July, August time frame that we met with
19 SNC-Lavalin also.

20 CHRISTINE MAINVILLE: Did you only
21 meet --

22 DESMOND NG: The results of those
23 meetings was updated -- well, not updated, but our
24 Thales/Alstom vehicle scope split.

25 CHRISTINE MAINVILLE: Was there only

1 one meeting or several meetings?

2 DESMOND NG: I don't know.

3 CHRISTINE MAINVILLE: Were you part
4 of --

5 DESMOND NG: Sorry. No, I was never
6 part of that.

7 CHRISTINE MAINVILLE: Okay.

8 DESMOND NG: Yeah. I just got the
9 results, which were to say here's the final agreed
10 Thales/Alstom scope split as agreed, so -- and we
11 bundled that and submitted it with our updated
12 offer at that time.

13 CHRISTINE MAINVILLE: Do you know if
14 there was discussion about -- with Alstom about
15 how -- about the integration of the two systems, of
16 Thales's signalling system and the rolling stock?

17 DESMOND NG: That would be, like, who
18 is the system integrator of the -- of both systems?

19 CHRISTINE MAINVILLE: M-hm.

20 DESMOND NG: I can't remember if it was
21 in the -- in a higher level scope split. Possibly.
22 Usually we -- I would probably assume it's -- it's
23 at the consortium level because usually it's --
24 it's signalling, rolling stock, traction power.
25 They usually add it at the proponent level.

1 CHRISTINE MAINVILLE: Do you recall if
2 the consortium had anyone in that role?

3 DESMOND NG: Specifically no, but I
4 would assume that -- I would assume that's what we
5 assumed because that's our typical going-in
6 position. We, Thales, do not do system integration
7 at a prime proponent level, and that's our standard
8 default condition going into these PPP bids.

9 CHRISTINE MAINVILLE: Do you -- would
10 you normally -- what would you have normally
11 expected in terms of planning on the systems
12 integration front during the procurement phase and
13 contract negotiation phase?

14 DESMOND NG: Are you referring to what
15 would be Thales's typical activities in our
16 schedule?

17 CHRISTINE MAINVILLE: Well, yes. Let's
18 start there.

19 DESMOND NG: Okay. So in most -- in --
20 at the RFP phase, as in most of our bids, we would
21 assume that we would usually do -- we would
22 install -- in the first two vehicles, we would
23 install our onboard computers, and we would train
24 the vehicle supplier on how to install, how to do
25 static post-installation checkout, start up the

1 computer, make sure it works and all that, right?
2 So we usually do always the first two trains with
3 the rolling stock. From Trains 2 and beyond, then
4 it's the rolling stock's responsibility, and we
5 would just supervise to make sure they're doing all
6 right but don't -- we won't actually perform the
7 work ourselves. So that's our typical onboard
8 installation and testing activities.

9 For commissioning testing, then it's
10 Thales's full responsibility. Once the onboard
11 computers are installed, it starts up properly,
12 then Thales would take over, and we would test all
13 the trains ourselves to make sure it's working
14 because it's part of the -- the signalling system.
15 And when we do it, it's a function of when the
16 vehicle -- the new vehicles are delivered by
17 Alstom, so we only can install our computers when
18 they deliver the vehicles to the City. So -- and I
19 can't remember if we had that vehicle delivery
20 schedule in the bid or not, but -- so that's how we
21 would lockstep our schedule with the rolling stock
22 schedule.

23 CHRISTINE MAINVILLE: And why is it
24 that Thales won't do the installation of --

25 DESMOND NG: For the -- all the trains?

1 CHRISTINE MAINVILLE: For all the
2 trains, yes.

3 DESMOND NG: Because it's too
4 expensive. Some of these vehicle manufacturings
5 can take 3, 4 years, and so just to have people
6 there for 4 years, it's a level of effort. It's
7 too expensive --

8 CHRISTINE MAINVILLE: Right.
9 Because --

10 DESMOND NG: -- and so that's --

11 CHRISTINE MAINVILLE: Thales would need
12 to keep people on the project, you mean, until --

13 DESMOND NG: Yeah.

14 CHRISTINE MAINVILLE: -- the vehicles
15 are ready. Okay.

16 DESMOND NG: Yeah. And it's also once
17 you do two, it's a cookie-cutter. It's the same
18 old, same old. So they can -- the rolling stock
19 supplier can do it, yeah. And we've done this
20 model in -- all around the world, in --

21 CHRISTINE MAINVILLE: Okay. And is
22 there some testing of the internal components of
23 the VOBC that is to be done by the rolling stock
24 supplier?

25 DESMOND NG: No. They are not allowed

1 to touch our equipment. Like, we would install in
2 a rack and then there's sub racks in there, so we
3 would install the computers ourselves and then the
4 cables that would maybe connect to the train
5 peripherals - the brakes, the emergency stop
6 button, the doors - that -- we will work with them
7 to connect those. All the vital train lines we
8 will connect, but that's the scope. So everything
9 from the -- our vehicle onboard computer, called
10 VOBC, to the train lines, that's where it stops,
11 but once it touches the rolling stock body or the
12 components, then that's the rolling stock's
13 responsibility.

14 CHRISTINE MAINVILLE: Did you
15 understand --

16 DESMOND NG: We are not allowed to --
17 we are not allowed to drill onto the -- you know,
18 we can't drill and screw things onto the body of
19 the trains.

20 CHRISTINE MAINVILLE: And is that what
21 was done here in terms of division of --

22 DESMOND NG: Yeah, yeah, we -- there's
23 no -- it was nothing different than what we would
24 do on any other rolling stock, and our system --
25 our CBTC system is agnostic for rolling stock, so

1 we've installed it on not only Alstom vehicles:
2 Siemens vehicles, Bombardier, Hyundai Rotem, CAF,
3 CRRC in China. So we've had a lot of experience
4 installing, so when we -- so at this point in the
5 bid of the Ottawa LRT, we -- you know, it was the
6 standard assumptions going in that procurement.

7 CHRISTINE MAINVILLE: Okay. So you
8 don't -- you're not aware of any later challenges
9 or dispute over testing within the VOBC as between
10 Thales and Alstom? You're not aware of that?

11 DESMOND NG: At bid -- at RFP phase,
12 no, no.

13 CHRISTINE MAINVILLE: Okay. Do I take
14 it from what you've just said that Thales doesn't
15 really have a preferred vehicle supplier that it
16 likes to work with?

17 DESMOND NG: Yes, correct, yes.
18 Because there are many tenders around the world
19 where -- that the vehicle supplier is procured
20 separately, and the signalling is procured
21 separately, and so you just -- we just have to
22 interface to whatever rolling stock suppliers there
23 are out there. And this includes brand-new trains
24 and retrofit, what we call brownfield trains.
25 We've done both.

1 CHRISTINE MAINVILLE: And you mentioned
2 Alstom as being one of the rolling stock suppliers
3 with which Thales had worked, but am I right that
4 this was the first time that the two systems were
5 integrated on an LRV?

6 DESMOND NG: Yes, I believe so. Yeah.
7 Because I -- I believe the Alstom vehicles were a
8 new vehicle being manufactured specifically for
9 Ottawa. But I know from firsthand experience
10 we've -- we've worked with the Alstom vehicles in
11 Shanghai and in China before, so...

12 CHRISTINE MAINVILLE: Are those LRVs?

13 DESMOND NG: No, they're -- these would
14 be bigger -- bigger trains. Yeah.

15 CHRISTINE MAINVILLE: And what is your
16 understanding of the train model -- the vehicle
17 model that Alstom used in this case? You said it
18 was new for Ottawa? Did you -- what's your
19 understanding of the service-proven aspects of this
20 vehicle?

21 DESMOND NG: The specs I don't have
22 personally, the technical specifications. If I
23 remember correctly, it was -- I think they may have
24 used it -- or rebranded it from another project in
25 the States to make it for Ottawa, but those are

1 just rumours that I heard, but I don't have the
2 technical specifications of the vehicles
3 themselves.

4 CHRISTINE MAINVILLE: Okay. And you
5 don't know if it would be considered -- would have
6 been considered a service-proven vehicle or not?

7 DESMOND NG: If it's brand-new, then
8 no. It can't be, no.

9 CHRISTINE MAINVILLE: If it's adapted
10 from a model that they had in Europe called the
11 Citadis Dualis --

12 DESMOND NG: Okay.

13 CHRISTINE MAINVILLE: -- what would
14 be -- maybe I should ask you: What would be your
15 definition of a service-proven vehicle?

16 DESMOND NG: It's been in revenue
17 service for at least minimum, I guess, 5 years --
18 right? -- and it's proven, so --

19 CHRISTINE MAINVILLE: The same --

20 DESMOND NG: -- but it's a lot of --
21 and if we --

22 CHRISTINE MAINVILLE: The same model.

23 DESMOND NG: Yeah, the same model,
24 right, and -- which means the train characteristics
25 are the same, the braking and the propulsion are

1 the same, then we can make assumptions that, yeah,
2 it's the same old, same old for Thales, right,
3 but -- an example -- like, on the SkyTrain, they're
4 Bombardier trains, and they're the same models -
5 Mark I, II, and III - that it's -- that are being
6 manufactured at Bombardier, so we know how the
7 trains are; we know where to install it; we know
8 the characteristics of it. But for the Ottawa one,
9 we -- this is new. It was brand-new to us, so...

10 CHRISTINE MAINVILLE: And -- but I take
11 it each train has to be adapted to the
12 specificities of any project. Is there not always
13 some level of adaptation?

14 DESMOND NG: Yeah -- yes. If it's a
15 new train, then we would work with the rolling
16 stock provider to tell them, This is our vehicle
17 onboard computer; here's our dimensions; this is
18 where we like to install it. You know, and
19 sometimes they -- they want it in the middle of the
20 train or the back end of the train, so it depends
21 on where the rolling stock provider will give us
22 room to install the computers: This is where we
23 want to connect our cables; do we run it across the
24 entire cab, or can we go underneath? Can we go
25 from cab to cab? So these were all -- these would

1 be typical what we call vehicle design interface
2 points that we would then meet with the rolling
3 stock once the project is awarded.

4 CHRISTINE MAINVILLE: Is there any
5 industry definition or standard for what is
6 considered service-proven?

7 DESMOND NG: Not that -- there may be,
8 but from a Thales -- that I don't know, but from a
9 Thales perspective, it doesn't affect our
10 signalling system, so -- we only do the interface,
11 right, so -- yeah.

12 CHRISTINE MAINVILLE: And how would you
13 describe Thales's signalling system as it relates
14 to the one used in this project? Let me start with
15 this: Is there anything unique about it?

16 DESMOND NG: No. We -- we -- we -- our
17 system, we -- we were the first CBTC system
18 worldwide to deploy it in Vancouver 30 years ago,
19 and also the first radio system CBTC was in Las
20 Vegas, 2004, and that was Thales. So we've
21 deployed CBTC systems all around the world, and it
22 could be main line -- not main line but big trains
23 or LRT trains all around the world, so there -- for
24 Ottawa, it was nothing special. It was the same
25 old, same old cookie-cutter product. And I think

1 there were some slight new functions, but they're
2 mainly at the interface level, so...

3 CHRISTINE MAINVILLE: And what were
4 those?

5 DESMOND NG: I think the -- well, the
6 trains were on the -- on the roadways, right? So
7 there were some interfaces to, like, stop at
8 signals and stuff like that, but -- I'll have to
9 check my notes, but from a signalling perspective,
10 there was nothing major.

11 CHRISTINE MAINVILLE: I understand the
12 system is wireless?

13 DESMOND NG: Yes, what we call radio
14 CBTC.

15 CHRISTINE MAINVILLE: And is that
16 unique to Thales?

17 DESMOND NG: No, no. We've -- as I
18 mentioned, our first radio system installed was in
19 2004 in Las Vegas, and since then, we only sell
20 radio solutions all around the world.

21 CHRISTINE MAINVILLE: Okay. And what
22 about the fact that Thales's system comes, as I
23 understand it, in different pieces or components as
24 opposed to being what may be called a plug-and-play
25 system?

1 DESMOND NG: Well, signalling systems
2 are very complex, so it's not like buying an Apple
3 product. So it's comprised of a number of major
4 subsystems. Our radio system, what we call data
5 communications, is one chunk, I guess you can call
6 it, in a subsystem. The vehicle onboard computers,
7 VOBC, is another subsystem, major subsystem. Our
8 automatic train supervision, which is at the
9 operations control centre, where the operators can
10 see the trains move back and forth and send
11 messages and stop the trains from HMI GUI - that's
12 another subsystem - and then the wayside where
13 we -- with our zone controllers, where we can
14 separate the trains and stop them, that's the
15 fourths major component. So there's four - zone
16 controllers, VOBCs, the ATF, and the DCF - that
17 comprises our radio CBTC system.

18 CHRISTINE MAINVILLE: And is that
19 something that is proprietary to Thales or unique
20 in some way?

21 DESMOND NG: The software is
22 proprietary. A lot of the hardware -- it's a
23 mixture. For the hardware, some are off the shelf
24 commercial; some are proprietary manufactured in
25 China, in Germany Thales, so... Software is

1 proprietary.

2 CHRISTINE MAINVILLE: Do you know if
3 other systems -- CBTC systems come as a plug-in,
4 plug-and-play unit?

5 DESMOND NG: No. We're -- having
6 worked in bids for 25 years and all the
7 competitors, Siemens, Alstom, they're very similar.
8 It's just -- what suppliers they pick, there's
9 no -- I know for a fact Alstom doesn't -- there's
10 not one office where they develop it. Everything's
11 developed all across internationally and then they
12 put it all -- integrate it at the customer's site.
13 So all the major signalling suppliers are very
14 similar to Thales.

15 CHRISTINE MAINVILLE: Okay. And --

16 DESMOND NG: For signalling.

17 CHRISTINE MAINVILLE: Sorry? For
18 signalling?

19 DESMOND NG: Yeah, for signalling.

20 CHRISTINE MAINVILLE: Did Thales not
21 have to create a new design for this particular
22 signalling system?

23 DESMOND NG: It would only be at the --
24 typically on our -- when we do these projects,
25 there's a what we call core product, so there's

1 a -- certain features that we will take from the
2 main four subsystems and then we will adapt or
3 put -- implement new features depending on the
4 customer requirements. As I mentioned -- well, for
5 sure the vehicle interface because it's an Alstom
6 vehicle, so that would -- there would be some
7 adaptation there, and then maybe some of the -- on
8 the HMI, there would be requirements there, just
9 to -- the City of Ottawa may want different GUI or
10 HMI interactions, so... Yeah, there would be
11 basically a core product and then some small
12 adaptations, but then this is standard. For these
13 main signalling systems, there's no such thing as
14 100 percent cookie-cutter. It's impossible.

15 CHRISTINE MAINVILLE: Yeah. And did
16 this project have -- require more adaptations than
17 the typical project?

18 DESMOND NG: No. No. It was --
19 because it's an LRT, it wasn't that major as some
20 of our other projects, so...

21 CHRISTINE MAINVILLE: And you said that
22 some adaptations are required -- would have been
23 required to adapt to Alstom's vehicles. What
24 discussions were there with Alstom early on in the
25 project about that? Are you aware of what, if any?

1 DESMOND NG: None, because these would
2 be internal to Thales, so... It's only at the
3 interface level where we talk to Alstom.

4 CHRISTINE MAINVILLE: You mean once
5 you're into the project phase? Into the --

6 DESMOND NG: No, the -- like, the
7 messages that go from our signalling system to the
8 Alstom vehicle -- because they -- the vehicles will
9 have their own communications system, like a
10 network, so what messages -- if we send this
11 message, what does it control? If Alstom sends it
12 back to us, what is the expected input to us? So
13 it's only at the interface level where we talk, but
14 anything -- any -- any adaptation within the Thales
15 system, our own internal system, that's within
16 Thales. Alstom doesn't need to know what's
17 happening, so...

18 CHRISTINE MAINVILLE: And -- but when
19 would those interface system discussions usually
20 take place?

21 DESMOND NG: That was part of the
22 Thales/Alstom scope split discussions, which was
23 around probably July, August 2012 time frame.

24 CHRISTINE MAINVILLE: And do you know
25 whether those were -- those discussions were more

1 limited than they would otherwise be in other
2 projects?

3 DESMOND NG: I wasn't a part of it, so
4 I don't know.

5 CHRISTINE MAINVILLE: Okay. I take it
6 you're not aware of any challenges that arose on
7 the systems integration front over the course of
8 the project?

9 DESMOND NG: Yeah, well, I -- I wasn't
10 involved in the project, but I heard through the
11 project team and other sources within Thales, yes,
12 there were issues on the project itself. But I
13 don't know the real details and stuff because I'm
14 not part of the project team, so...

15 CHRISTINE MAINVILLE: I take it part of
16 the integration requires some different iterations
17 of ICDs to be exchanged as between the signalling
18 system provider and the rolling stock provider?

19 DESMOND NG: Correct, yes.

20 CHRISTINE MAINVILLE: So to what extent
21 can that be planned in advance as opposed to it
22 being an iterative process over the course of the
23 project? Like, could that be sorted out fairly
24 early on, or does it necessarily have to progress
25 over a lengthy period of time?

1 DESMOND NG: No, we can -- I mean,
2 sometimes we can submit what we call a vehicle
3 onboard computer ICD or also a vehicle onboard
4 computer black box interface where we state that
5 this is our typical VOBC, these are our typical
6 interfaces, and then, Mr. Rolling Stock Provider,
7 this is our assumption for Thales; can you meet
8 these? So...

9 CHRISTINE MAINVILLE: Do you know --

10 DESMOND NG: But I'm just checking -- I
11 don't think we submitted anything like that as a
12 bid deliverable, and it's only down to the
13 Thales/Alstom scope split that was kind of, like,
14 the definitive scope between Thales and -- and
15 Alstom. Yeah.

16 CHRISTINE MAINVILLE: And do you recall
17 what --

18 DESMOND NG: So we --

19 CHRISTINE MAINVILLE: Sorry, go ahead.

20 DESMOND NG: Yeah, we did not submit
21 those documents to them as part of the bid
22 deliverables. It was only the Thales/Alstom scope
23 split submitted, which were part of the -- the
24 final conclusion of the meetings between Thales and
25 Alstom, so...

1 CHRISTINE MAINVILLE: And do you know
2 why those documents would not have been provided?

3 DESMOND NG: They'd never asked for
4 one, and we don't provide it unless -- sometimes,
5 some competitive -- not competitive. Some tenders
6 will require us to submit it, so we don't -- if
7 they don't ask for it, we don't submit it. And
8 also because we went straight to the -- because
9 there were actually face-to-face meetings, that
10 kind of superceded -- maybe it was presented at
11 those meetings. I don't know, right? And --
12 because there had to be some meetings, they
13 say okay -- maybe there was presentations and stuff
14 like that, but I don't have records of those and
15 what was presented.

16 CHRISTINE MAINVILLE: But presumably,
17 even if it's not requested, at some point in time,
18 that's something Thales needs to provide -- is it
19 not? -- to the rolling stock provider.

20 DESMOND NG: At the project phase,
21 yeah.

22 CHRISTINE MAINVILLE: Right. Okay.
23 And do you know what was provided for on this
24 project in terms of timelines for Thales to produce
25 that?

1 DESMOND NG: Produce what?

2 CHRISTINE MAINVILLE: Well, yeah.

3 Let's be clear what we're talking about. The
4 ICD -- what I understood to be sort of a template
5 base --

6 DESMOND NG: There were -- the ICDs and
7 the black box interface were never submitted as
8 part of the RFP bid documents to --

9 CHRISTINE MAINVILLE: No, but do you
10 know whether the --

11 DESMOND NG: On the project?

12 CHRISTINE MAINVILLE: What the contract
13 provided for in terms of when it would be produced
14 during the project phase?

15 DESMOND NG: No, I -- I don't know the
16 timeline itself, but -- but I would say it's part
17 of usually preliminary design phase, which is about
18 half a year into --

19 CHRISTINE MAINVILLE: Okay.

20 DESMOND NG: Half a year after NTP,
21 typically.

22 CHRISTINE MAINVILLE: And I take it
23 this is basically something that an ICD -- a base
24 ICD that Alstom, in this case, could start working
25 off of until the final ICD is --

1 DESMOND NG: Yes.

2 CHRISTINE MAINVILLE: -- firmed up.
3 Okay.

4 DESMOND NG: Yeah, yeah.

5 CHRISTINE MAINVILLE: Okay. And you
6 don't know when that was provided in --

7 DESMOND NG: No. Anything after the
8 project award I was not involved.

9 CHRISTINE MAINVILLE: Do you recall if
10 anyone by the name of Roger Woodhead was involved
11 on SNC's end during the procurement period? SNC --

12 DESMOND NG: No. I -- his name is not
13 familiar to me.

14 CHRISTINE MAINVILLE: Okay. And you
15 don't know how the two subcontracts were negotiated
16 as it relates to Thales's subcontract and Alstom's?

17 DESMOND NG: No. Yeah, I don't know
18 how Alstom -- because it's a separate -- it's a
19 vehicle subcontract, right? So we had no
20 involvement in it. Only the Thales signalling
21 portion.

22 CHRISTINE MAINVILLE: And you don't
23 know, for instance, who on OLRTC's end, on the
24 consortium side, was involved and whether they were
25 involved in negotiating both?

1 DESMOND NG: I don't know.

2 CHRISTINE MAINVILLE: Okay.

3 DESMOND NG: I was not involved.

4 CHRISTINE MAINVILLE: Would you have
5 had -- you or Thales, to your knowledge, would have
6 had discussions with OLRTC about the systems
7 integrator role?

8 DESMOND NG: No because we're very
9 clear that we don't do system integrator --
10 integration.

11 CHRISTINE MAINVILLE: But would you
12 make clear the need for it, or would that be a
13 given?

14 DESMOND NG: I would -- yes, there --
15 we -- because having worked on these many
16 consortium bids, I believe the capture lead would
17 have for sure iterated to the consortium that
18 Thales does not do system integration.

19 CHRISTINE MAINVILLE: When would you --

20 DESMOND NG: And if we had to, we would
21 probably not bid, so -- to be honest.

22 CHRISTINE MAINVILLE: When would you
23 expect a system integrator to start becoming
24 involved in a project like this?

25 DESMOND NG: Even as early as during

1 the preliminary design phase. They need to
2 understand how the system fits together. Then they
3 have to do the planning, the scheduling, when the
4 site -- when is equipment being procured, delivered
5 to the site, when can installation start, when can
6 construction start, then all the testing activities
7 that go along with it. So usually, on a project
8 this size, it's as early as possible in the project
9 phase, not at the back end, we assume, so...

10 CHRISTINE MAINVILLE: And do you know
11 if there's typically any work done to ensure that
12 the rolling stock subcontract and the signalling
13 system subcontract aligned?

14 DESMOND NG: We were never given the
15 overall project master schedule at the consortium
16 level, and I did -- I checked notes. We don't even
17 have the delivery schedule of when Alstom vehicles
18 are actually delivered to us. So we just made
19 assumptions and say here's where we think, and we
20 submitted our project schedule, Thales's project
21 schedule.

22 CHRISTINE MAINVILLE: So you never --

23 DESMOND NG: And then maybe --

24 CHRISTINE MAINVILLE: Sorry, keep
25 going.

1 DESMOND NG: Yeah. So -- and then we
2 assumed that the consortium would integrate our
3 schedule into the overall master schedule.

4 CHRISTINE MAINVILLE: So you're saying
5 Thales never had Alstom's timelines or schedule.
6 And just for the record, you have to say --

7 DESMOND NG: Correct, yes.

8 CHRISTINE MAINVILLE: Yeah. And -- but
9 I would assume Thales at least had a date -- would
10 have had a date for when, under its own contract,
11 it expected to receive the rolling stock, either
12 the -- the specifications and then the vehicle
13 itself?

14 DESMOND NG: Yes, we would have made
15 assumptions in Thales's design phase, procurement
16 phase, testing and installation phase.

17 CHRISTINE MAINVILLE: So you -- so it
18 would not -- there would not be a date in the
19 contract that said this is when you will receive --
20 you can -- Thales, you will receive -- like,
21 wouldn't OLRTC undertake to produce the vehicle by
22 a certain date?

23 DESMOND NG: Yes, they would -- they
24 would have to. We, Thales, provided our own
25 schedule of a certain duration too - like, maybe

1 it's 4 or 5 years - so everything to Thales had to
2 fit within there, so...

3 CHRISTINE MAINVILLE: You don't know
4 who that was --

5 DESMOND NG: But maybe -- maybe the
6 overall project schedule can be longer than that,
7 right?

8 CHRISTINE MAINVILLE: You don't know
9 who that was provided to at OLRTC?

10 DESMOND NG: No. Sorry, our Thales
11 project schedule?

12 CHRISTINE MAINVILLE: Yes.

13 DESMOND NG: It was part of the -- one
14 of the bid submissions from Thales, so it's a part
15 of the package.

16 CHRISTINE MAINVILLE: Okay.

17 DESMOND NG: It would go to our capture
18 lead, capture lead to SNC-Lavalin.

19 CHRISTINE MAINVILLE: Okay. And I just
20 want to be clear: Are you saying, in this project,
21 Thales produced its schedule, but there -- in
22 Thales's subcontract, there was no -- to your
23 knowledge, no date set for when Thales would
24 receive what it needed from the rolling stock
25 supplier?

1 DESMOND NG: Yes. I just want to
2 double-check one thing.

3 CHRISTINE MAINVILLE: Are you
4 consulting the contract, or do you have -- is that
5 what you have?

6 DESMOND NG: Yes. We made a number of
7 assumptions that we put into our project schedule,
8 when the customer has to provide certain things --
9 customer would be, in this case, SNC-Lavalin. So
10 there's a number of dependencies that we've already
11 included into the Thales schedule.

12 CHRISTINE MAINVILLE: Okay.

13 DESMOND NG: Which -- which in -- let
14 me check. I think it includes the vehicles. Let
15 me check. So we would need their interface --
16 vehicle interface data by a certain date, and...
17 Okay. Yeah. So no -- okay. So I confirmed that
18 in our Thales schedule, there are dates when we
19 expect the vehicles to be delivered from Alstom.
20 It's in the -- our project schedule.

21 CHRISTINE MAINVILLE: Okay. And do you
22 know whether OLRTC committed to that, ultimately?

23 DESMOND NG: No. I -- that I don't
24 know. I don't know if we --

25 CHRISTINE MAINVILLE: Okay.

1 DESMOND NG: -- we put those dates in
2 or it came from the customer.

3 CHRISTINE MAINVILLE: Okay.

4 DESMOND NG: SNC-Lavalin.

5 CHRISTINE MAINVILLE: And do you know
6 how the client -- here, OLRTC, how they would
7 normally go about ensuring that the two
8 subcontracts align, so that the rolling stock
9 contract aligns with the signalling system
10 contract? Do you know anything about how -- what
11 you would expect or what you know to happen on
12 projects in that regard?

13 DESMOND NG: On -- on other bids I've
14 worked on, we would -- we would normally request
15 the vehicle delivery dates from the -- the -- the
16 customer, right? Sometimes they don't have it,
17 because they say, well, the rolling stock is
18 still -- the contract still being negotiated; I
19 don't have those dates. In that circumstance, we
20 then make assumptions based on our experiences - so
21 many weeks for the first few vehicles and then so
22 many weeks or months for the next remaining
23 vehicles. If the customer provides us the vehicle
24 delivery schedule, then we will align our schedule
25 to match the rolling stock schedule, and then we

1 then put -- submit this -- Thales's schedule to the
2 customer.

3 CHRISTINE MAINVILLE: So you might
4 occasionally receive the vehicle supplier's
5 schedule?

6 DESMOND NG: Yes. If they have it
7 ready, yes.

8 CHRISTINE MAINVILLE: Do you know if it
9 was received in this case?

10 DESMOND NG: We -- we have it in our
11 master schedule, but the question I can't answer is
12 whether we made assumptions or it came from the
13 customer.

14 CHRISTINE MAINVILLE: Okay. Got it.

15 DESMOND NG: I don't know. I just see
16 the schedule itself right now, so...

17 CHRISTINE MAINVILLE: And would Thales
18 ever see the subcontract between the rolling stock
19 provider and the client?

20 DESMOND NG: No. By the subcontract,
21 you mean their terms and conditions, their price
22 and all that? No, we would never see it. We can
23 see it if it's at the project agreement or the
24 customer requirements because sometimes there's
25 sections in the tender where it says these are the

1 vehicle rolling stock requirements, right? So if
2 it's at that level, we can see it if it's passed to
3 us, but the actual physical subcontract, no, we
4 would never see it.

5 CHRISTINE MAINVILLE: Okay. Do you
6 recall what the plans were for validation testing?

7 DESMOND NG: We -- well, Thales
8 would -- would develop the software -- our typical
9 process is we would develop the onboard software in
10 Canada, Toronto, and then we would test in house,
11 in our labs, and then we would deliver the
12 software -- firmware, actually, to the vehicles
13 themselves and then install it there, and then we
14 would then work with the rolling stock provider to
15 test our trains, but it would be under the
16 responsibility of Thales to test the trains with
17 the signalling supplier. But in terms of a system
18 integration between signalling and vehicle, no, no
19 documents were ever provided at the RFP stage.

20 CHRISTINE MAINVILLE: Can you clarify
21 that on the integration piece?

22 DESMOND NG: Well, the integrate -- we
23 would provide a system test plan, but it's more at
24 a high level: This is what we typically do to test
25 the trains and all that. But down to the specific

1 task of testing every little component on the
2 train, we don't -- that was never submitted.
3 That's -- that would be on the project phase.

4 CHRISTINE MAINVILLE: Okay. I take --
5 would that include the dynamic testing that's part
6 of the --

7 DESMOND NG: Yes. Our typical testing
8 would be static PICO, which is to start up the
9 computer; dynamic PICO, where you actually move the
10 trains on a test track; and then the full system
11 testing/commissioning would be on the actual main
12 line itself, yeah, controlled by the signalling
13 system.

14 CHRISTINE MAINVILLE: So was there any
15 planning for the validation testing during your
16 time -- during your -- the procurement phase on
17 this project?

18 DESMOND NG: It would be just probably
19 very high -- schedule activities in our schedule,
20 like system testing, half a year or something like
21 that. But we would not break it down to more
22 details than that.

23 CHRISTINE MAINVILLE: So you don't
24 recall if there were discussions with Alstom about
25 where this would be done on the first --

1 DESMOND NG: I saw some -- it could
2 be -- I think the static PICO was on the rolling
3 stock test track. I think the test track's in -- I
4 assume Ottawa, and then the -- the actual testing
5 itself was on the customer's system, tracks.

6 CHRISTINE MAINVILLE: Okay. You don't
7 recall plans about testing on LRV 1 and 2 in France
8 or the United States?

9 DESMOND NG: No. That I wasn't even
10 aware of, no.

11 CHRISTINE MAINVILLE: Okay. How
12 important is validation testing for Thales?

13 DESMOND NG: Extremely important
14 because without that, every train -- even though
15 the vehicle manufacturer says, Oh, yeah, once we
16 manufacture Train 1, all other trains are the same,
17 it never happens in reality. Every train is a
18 little bit different - every one stops a bit
19 differently; they accelerate a bit different - so
20 we -- a lot of times, we have to tweak our software
21 a little bit for some of the -- a couple of the
22 trains to make it ride or stop properly, so -- and
23 this takes a lot of time.

24 CHRISTINE MAINVILLE: When would you
25 have expected validation testing to take place on

1 the Ottawa project, based on the --

2 DESMOND NG: On the project phase
3 itself, in the project phase itself, it would be
4 when we start -- when the trains are actually
5 moving on the main line, so it would be in the
6 testing/commissioning phase, which is typically
7 almost a year before revenue service, typically.
8 Revenue service, go back a year. It's about a
9 year.

10 CHRISTINE MAINVILLE: So that's --

11 DESMOND NG: For the system
12 commissioning.

13 CHRISTINE MAINVILLE: Is that the
14 integration testing?

15 DESMOND NG: Yeah, system integration
16 testing.

17 CHRISTINE MAINVILLE: Okay. And so --

18 DESMOND NG: That -- so when you say
19 "validation," to me, it means in house, which is
20 then -- when we develop the software, we then have
21 FAT, factory acceptance test, right, in our
22 factory, and then once we verify that it works and
23 then there's usually integration to make sure it's
24 FAT-ed properly, we're happy with it, then we can
25 officially release it to the field, and then we --

1 for system integration testing.

2 CHRISTINE MAINVILLE: But would the
3 validation testing phase, in your mind, include
4 dynamic testing?

5 DESMOND NG: Yeah -- okay, the --
6 that's on the blurry boundary, so I go -- yes, I
7 assume so because sometimes when we do the dynamic
8 testing, you find a lot of defects and bugs that
9 you then have to update the software to make sure
10 the test works. Yeah.

11 CHRISTINE MAINVILLE: Right.

12 DESMOND NG: Before they can start --
13 before they can system testing officially, so yes.

14 CHRISTINE MAINVILLE: So would you not
15 typically do that early on, on the first one or two
16 LRVs, before you produce the series?

17 DESMOND NG: Yes, yes.

18 CHRISTINE MAINVILLE: So -- so for
19 instance, here - leaving aside the system -- the
20 proper full system integration testing towards the
21 end of the project - would there not be plans for
22 some level of integration testing on the first one,
23 two, or three LRVs?

24 DESMOND NG: First two we would do
25 static PICO and then followed by dynamic PICO

1 testing. Yeah.

2 CHRISTINE MAINVILLE: Okay. So when
3 would you expect the static PICO testing on the
4 first LRVs to happen in --

5 DESMOND NG: When the test track is
6 ready.

7 CHRISTINE MAINVILLE: Okay.

8 DESMOND NG: Because they're typically
9 done on the test track.

10 CHRISTINE MAINVILLE: And typically you
11 would want that fairly -- early on enough that
12 you're not producing the series before that's done?
13 Is that --

14 DESMOND NG: Correct, yeah. It has to
15 be tested on the test track first before it goes
16 onto the main line. Correct.

17 CHRISTINE MAINVILLE: And what are the
18 implications of not doing that? Is it just that
19 you're going to end up having to do a lot of
20 software changes?

21 DESMOND NG: Yeah, yes. Later in
22 the -- in the -- in the back end of the project, we
23 then force the -- doesn't give us much time for
24 system testing.

25 CHRISTINE MAINVILLE: Okay.

1 DESMOND NG: So that test track being
2 available was always a dependency for Thales for
3 dynamic testing.

4 CHRISTINE MAINVILLE: Okay. Do you
5 have any views on the sufficiency of the budget
6 here? Of course, Thales had a -- just one piece of
7 this, but from Thales's perspective, were there any
8 concerns in terms of the financial constraints?

9 DESMOND NG: You mean at the project
10 agreement level?

11 CHRISTINE MAINVILLE: Yes.

12 DESMOND NG: No because that's beyond
13 us, and in these prime PPP ones, typically
14 signalling is usually between 5 to 8 percent of the
15 overall civil contract, typically.

16 CHRISTINE MAINVILLE: And so for
17 Thales's piece of this, there were no concerns
18 about -- it was not unusual?

19 DESMOND NG: No, no.

20 CHRISTINE MAINVILLE: So do you recall
21 in terms of the City's requirements in this case
22 that there was a need to move -- a significant
23 ridership and a need to move a significant number
24 of people per hour per direction?

25 DESMOND NG: Probably. That's -- if

1 it's in the project agreement, the customer
2 requirements, then it's -- and it's -- but that's
3 standard in all these big bids, so... It's higher
4 throughput, better -- more ridership, faster
5 headway, less maintenance, so it's -- these are,
6 like, the five or six big -- major win themes for
7 all customers worldwide. Yeah.

8 CHRISTINE MAINVILLE: That everybody
9 wants.

10 DESMOND NG: Everyone wants. But from
11 a Thales perspective, it's -- to be honest, it's
12 immaterial to Thales, right, because as long as our
13 system meets the requirements for the signalling
14 subsystem, then that's our contractual obligation,
15 so...

16 CHRISTINE MAINVILLE: Okay. Does it
17 not impact Thales to the extent that it creates
18 certain specific needs for the train control system
19 and the headway between trains?

20 DESMOND NG: Yes, because if those are
21 signalling -- I mean, those are typically
22 signalling requirements. Headway, reliability,
23 maintainability, percentages or numbers, those are
24 contractually obligated by Thales to meet those
25 performance numbers or KPIs.

1 CHRISTINE MAINVILLE: Was this not a
2 fairly innovative design in this case in that
3 regard?

4 DESMOND NG: No. We didn't see
5 anything out of the ordinary from what we've seen
6 on other major bids, as far as I remember. So -- I
7 don't think any of the criteria or key performance
8 indicators were out of the ordinary.

9 CHRISTINE MAINVILLE: And what about
10 the speed, the maximum speed limit of 100
11 kilometres an hour?

12 DESMOND NG: At the design -- the
13 operational speed? No, we've -- we've hit trains
14 up to 110, 120 before, so --

15 CHRISTINE MAINVILLE: Light rail
16 trains?

17 DESMOND NG: That I do not know, no.
18 We've -- we've -- I've seen tenders where we can --
19 we've -- meet LR -- 110, 120 kilometres per hour,
20 so... But I don't know if they're specifically LRT
21 trains.

22 CHRISTINE MAINVILLE: Would that impact
23 Thales's system, the speed?

24 DESMOND NG: Yes. The higher the
25 speed, then there would be design -- could be

1 design issues if it's a radio -- radio system,
2 because it has to keep track of the -- of the
3 accuracy of where the trains are. But I've --
4 we've never, as far as I know, encountered any
5 issues in tracking the trains, so -- especially at
6 100 kilometres an hour. I've never seen an issue,
7 no.

8 CHRISTINE MAINVILLE: Do you recall the
9 journey time requirements on this and whether those
10 were quite aggressive?

11 DESMOND NG: No, I don't specifically
12 recall. If it was part of signalling requirements,
13 we did do a compliance on it if it's part of it,
14 but I can't remember what our actual compliance to
15 it was.

16 CHRISTINE MAINVILLE: Okay. Would you
17 normally expect the journey time to vary depending
18 on climate or weather, like inclement weather?

19 DESMOND NG: Journey time, just to
20 confirm, is from one point and then coming all the
21 way back to the same point? Is that what you
22 consider journey --

23 CHRISTINE MAINVILLE: Or between
24 stations. Would you have -- would you ever have a
25 guarantee like that?

1 DESMOND NG: If it's a requirement,
2 like, yeah, it could. There's headway usually --
3 design headway requirements and operational headway
4 requirements. There's stopping time, stopping
5 distance. Could be round trip, like, from -- you
6 have to go the entire circular route, so I've seen
7 those requirements. But I can't remember
8 specifically what the numbers are for journey time
9 in Ottawa, so -- but I did not see anything -- I
10 did not see anything flagged as out of the
11 ordinary.

12 CHRISTINE MAINVILLE: Okay. So you
13 don't recall whether it required some adaptation to
14 the acceleration rate and whether there would be
15 coasting prior to braking?

16 DESMOND NG: No, I don't recall seeing
17 anything on this.

18 CHRISTINE MAINVILLE: And am I right
19 that the journey time -- let's say it's from the
20 beginning of the -- not the cycle, but the ride --

21 DESMOND NG: Yeah.

22 CHRISTINE MAINVILLE: -- to the end of
23 it.

24 DESMOND NG: End to end. Yeah.

25 CHRISTINE MAINVILLE: Would -- should

1 that -- should the speed -- let me rephrase.
2 Should the speed depend -- be dependent on weather
3 conditions?

4 DESMOND NG: No. Our system is --
5 works independent of weather conditions.

6 CHRISTINE MAINVILLE: So even in a
7 climate like Ottawa's, with winters and -- you
8 wouldn't adapt the speed based on that.

9 DESMOND NG: No, no, no. And we
10 were -- I remember there were discussions on the
11 heavy snowfall in Ottawa that -- that's one of the
12 discussions and whether we -- it would handle it,
13 and our technical team said yeah, it will handle
14 the heavy snowfall, so...

15 CHRISTINE MAINVILLE: And when the --
16 would there not be more expected sliding on the
17 tracks based on the temperature or -- or --

18 DESMOND NG: Possible, yes, but our
19 system can handle what we call slip-slide. It will
20 compensate for that. For example, in Vancouver
21 SkyTrain -- I mean, it snows here in Vancouver, and
22 then what we've seen the operator do is actually
23 put a -- put -- on fully automatic, let the trains
24 with no driver just go up and down the track all
25 night long to remove the snow, right, and then --

1 so that's ready to go all -- in the morning.
2 Because it's fully automated in Vancouver, and so
3 we were -- there is possible operational scenarios
4 from Ottawa city that they could do to avoid
5 getting snow on the tracks.

6 CHRISTINE MAINVILLE: And is that
7 adjusted with a different speed profile? As I
8 understand it, there are different speed profiles
9 and --

10 DESMOND NG: There are different speed
11 profiles depending on the gradient of the track,
12 because some -- it's never perfectly linear or
13 horizontal. There's always curvatures -- or ups
14 and downs and valleys and stuff. So the speed
15 profile is already hard-coded into the trains
16 because the track is fixed. So we know where it
17 will go down to a station, where it will go up on
18 the guideway. So the speed profiles are already --
19 they're hard-coded already in the trains, so --
20 which comes from the civil, the civil guideway
21 data.

22 CHRISTINE MAINVILLE: Sorry, repeat
23 that.

24 DESMOND NG: The -- it -- the elevation
25 and the speed and the curvature and the maximum

1 speed it can go on certain parts of the guideway,
2 they're provided by the civil contractor, right?
3 So maybe between this station and this station, you
4 only can go 80 kilometres. Another station,
5 because there is a curve, you have to slow down to
6 30 kilometres, but maybe this stretch is 2 miles
7 long; you can go up to 100 kilometres. So all of
8 that is already preprogrammed -- or not
9 preprogrammed but provided by us. In fact, it's a
10 dependency. The guideway data and speed profile
11 data must be provided to us by the client before we
12 can even -- because we have to enter this input
13 into our signalling system.

14 CHRISTINE MAINVILLE: If -- tell me if
15 this makes sense, this question, to you, but if you
16 don't adjust the speed profile, could that lead to
17 emergency braking --

18 DESMOND NG: Possible --

19 CHRISTINE MAINVILLE: -- unnecessary --

20 DESMOND NG: Yeah, it could.

21 CHRISTINE MAINVILLE: -- emergency
22 braking? Yes.

23 DESMOND NG: Yeah, and maybe the speed
24 profile will have to change because maybe once they
25 build it, it's not perfect, what they gave to us,

1 and so yeah, so maybe part of testing, you might
2 have to adjust the speed profile. Yeah.

3 CHRISTINE MAINVILLE: Okay. And if
4 there's too much emergency braking, could that lead
5 to wheel flats?

6 DESMOND NG: That I don't know. That's
7 a pure technical question.

8 CHRISTINE MAINVILLE: Okay.

9 DESMOND NG: Yeah.

10 CHRISTINE MAINVILLE: Was Thales to do
11 any work onsite in Ottawa at the MSF facility?

12 DESMOND NG: The maintenance and
13 storage facility, I think so, but again, that's now
14 at the project deployment phase, but I -- there
15 could be. If that is where our operations -- the
16 operations control centre is, the OCC, then yes, we
17 would definitely be there. Yeah.

18 CHRISTINE MAINVILLE: What plans were
19 there for testing and commissioning as it relates
20 to Thales's systems?

21 DESMOND NG: At the bid phase or the
22 project phase?

23 CHRISTINE MAINVILLE: Well, I mean, one
24 would inform the other, but what was --

25 DESMOND NG: On the -- on the project

1 phase, so we would typically have a test plan,
2 system test plan, system test procedures, system
3 test reports, integration testing, system
4 acceptance tests, a deployment schedule, so maybe
5 six or eight major documents. We would then need
6 to work with the civil or the prime: When can we
7 access the guideway or the buildings to install our
8 equipment, all that? So there's -- and then
9 there's drawings, right - all the as-builts, the
10 equipment to connect from here to here - so there's
11 many, many deployment drawings.

12 CHRISTINE MAINVILLE: Would Thales
13 expect those to be incorporated in the contract?

14 DESMOND NG: No. They would be CDRLs,
15 contract data requirement lists, so they would be
16 part of the project deliverables. But as part of
17 the bid phase, we will not provide all those
18 because we don't know yet, but it would -- there
19 would be a list of documents we would typically
20 provide during the project phase.

21 CHRISTINE MAINVILLE: Okay. You would
22 provide during the project phase the various test
23 plans and requirements that Thales has for its
24 systems?

25 DESMOND NG: Yes, yeah, yes.

1 CHRISTINE MAINVILLE: To -- so what
2 would be provided in the contract on this? Like,
3 what would Thales -- is there anything that you
4 would expect to be reflected in the contract?

5 DESMOND NG: At the RFP phase?

6 CHRISTINE MAINVILLE: In terms of
7 the -- no, no, in the actual contract, in terms of
8 the types of tests that would need to be done.
9 Would you provide for that in the contract?

10 DESMOND NG: Yes. Those documents, as
11 I mentioned, like system test plan -- signalling
12 system test plans, signalling test procedures,
13 integration of the -- probably between our system
14 and the rolling stock, so these -- at a higher
15 level, we would provide these and all the drawings
16 that come along with part of system testing and --
17 the part -- they usually are part of our typical
18 package that we provide. But they did -- they're
19 not fleshed out until, you know, all these meetings
20 start happening between the different suppliers.

21 CHRISTINE MAINVILLE: In the project
22 phase.

23 DESMOND NG: Yeah, in the project
24 phase.

25 CHRISTINE MAINVILLE: Okay. So after

1 the contract is signed.

2 DESMOND NG: Yes, yeah.

3 CHRISTINE MAINVILLE: Okay. Would
4 Thales ever want to provide for, you know, a
5 certain period of, you know, dry running or burn-in
6 period or anything like that? Would it ever make
7 that -- make that request to ensure that that's
8 done?

9 DESMOND NG: It would -- I don't know
10 if it's a -- it would be part of the -- usually the
11 preliminary system testing, the -- I think what we
12 call SIT, system integration tests, where we would
13 do kind of, like, the preliminary dry running, just
14 to make sure -- shake out the system, all the
15 interfaces work, external interfaces, our system
16 works, and then go into full, complete system
17 testing. Yeah. So there -- there would be a phase
18 called -- as I remember, SIT, system integration
19 test, which is this, I guess, dry running period.
20 Yeah.

21 CHRISTINE MAINVILLE: How long would
22 that normally be for, or how long would Thales want
23 it to be for?

24 DESMOND NG: Probably -- I -- a couple
25 months, maybe. 2, 3 months at the most.

1 ANTHONY IMBESI: And just to be clear
2 on your evidence on that, that's before revenue
3 service?

4 DESMOND NG: Sorry?

5 ANTHONY IMBESI: Just to be clear on
6 your evidence, what you're talking about in terms
7 of preliminary system testing, the SIT testing,
8 that's prior to revenue service?

9 DESMOND NG: Yes, yes. Everything's
10 prior to revenue service, yes.

11 CHRISTINE MAINVILLE: So I suppose my
12 question is on many projects, I take it you'd agree
13 that the testing and commissioning phase often ends
14 up being compressed? Is that fair to say?

15 DESMOND NG: Yes, usually. And it's --
16 on these big civil projects, it's -- it could be --
17 could be the civil construction, right? They find
18 problems, but -- maybe they're boring tunnels that
19 came out of nowhere and delayed the project for
20 half a year. An example is Vancouver Evergreen
21 Line. Maybe they're having problems with other
22 suppliers, platform screen doors, tracks, laying
23 the tracks, maybe the power, maybe building some of
24 the buildings itself, like OCC, the depots, so --
25 which could all delay Thales, yes.

1 CHRISTINE MAINVILLE: And --

2 DESMOND NG: Even the rolling stock.
3 Sometimes the rolling stock, the first two or
4 three, it's not what was stated in the -- in our
5 assumptions, right? They made new -- new
6 assumptions and stuff we didn't know until -- until
7 the project time. So yeah, any of these can change
8 our -- can impact our schedule.

9 CHRISTINE MAINVILLE: So I guess my
10 question is would Thales ever seek to preemptively
11 protect the time period it has to run the tests it
12 needs to run? You know, to ensure that it's --
13 that there's sufficient time from -- sufficient
14 from Thales's perspective to run the tests fully.
15 I think you may be frozen. Yeah.

16 PETER MANTAS: He looks frozen. And,
17 Ms. Mainville, I'm just wondering, maybe we should
18 take a break?

19 CHRISTINE MAINVILLE: Yes, I was going
20 to --

21 PETER MANTAS: Maybe that's --

22 CHRISTINE MAINVILLE: -- ask after --

23 PETER MANTAS: -- a good time.

24 CHRISTINE MAINVILLE: Exactly. I was
25 going to do it after this question, but let's break

1 and come back to it. Let's go off record.

2 -- OFF THE RECORD DISCUSSION --

3 -- RECESS AT 3:32 --

4 -- UPON RESUMING AT 4:00 --

5 CHRISTINE MAINVILLE: So, Desmond, I
6 don't know if you understood my -- if you heard my
7 last question, but it really had to do with whether
8 Thales would ever seek to kind of protect the time
9 that it needs for -- to conduct certain tests
10 relating to its signalling system.

11 DESMOND NG: I mean, yes. If there's
12 significant delays that cannot -- I mean, first of
13 all, Thales would try to work with the prime to
14 make sure that activities were aligned within
15 Thales's schedule and risk profile, right? So --
16 but if there's -- without any cost impact. If it
17 gets to a certain point where it's huge delays and
18 there's a big impact and a risk to Thales, then
19 there's a possibility that they can go for a
20 variation or a claim.

21 CHRISTINE MAINVILLE: Okay. I see.

22 DESMOND NG: I personally -- I
23 personally do not know if that has been done on the
24 Ottawa project - that is, if there's been any
25 claims by Thales.

1 CHRISTINE MAINVILLE: Okay. So I take
2 it by "prime," you mean you would look at the
3 project agreement, the overarching project
4 agreement, look at the -- what requirements --

5 DESMOND NG: No, not the project
6 agreement. It's the subcontract, signalling
7 contract documents signed and agreed between Thales
8 and SNC-Lavalin. There's a set of subcontract
9 signalling documents.

10 CHRISTINE MAINVILLE: Okay. And that
11 would reflect the testing, at least the core
12 testing requirements and criteria?

13 DESMOND NG: Well, it would reflect
14 the -- at this phase, it was -- as I mentioned, it
15 was very high level, right, at the -- at the
16 testing level, so maybe a couple lines in the
17 schedule. It's only during the project phase
18 that -- let's say there's a start and end date
19 during -- at the bid phase, but at the project
20 level, when we really delve into the activities,
21 then that end date of the testing, let's say,
22 slips, then there's a possibility that Thales could
23 claim for future price increases. Does that answer
24 your question?

25 CHRISTINE MAINVILLE: Yes. Well, let

1 me put it this way: Does Thales typically -- does
2 it try to provide for a burn-in period or a certain
3 duration of trial running or anything like that
4 prior to revenue service availability?

5 DESMOND NG: Yes, yes, they would.
6 Yeah. I don't know -- like, I just took a guess.
7 Maybe it's 2, 3 months.

8 CHRISTINE MAINVILLE: So would you have
9 that provided for in the contract -- in the
10 subcontract?

11 DESMOND NG: No, it wouldn't go to that
12 level.

13 CHRISTINE MAINVILLE: Okay. And could
14 you? Is there a reason you wouldn't?

15 DESMOND NG: Provide it in the
16 contract?

17 CHRISTINE MAINVILLE: Yeah.

18 DESMOND NG: Because we -- it's
19 probably too detailed at that level, right, and so
20 as I mentioned, it -- we're -- it's still very high
21 level at the RFP phase. Because even if you put in
22 the schedule, those maybe might shift left or
23 right --

24 CHRISTINE MAINVILLE: Okay.

25 DESMOND NG: -- depending on the actual

1 project execution, so I guess they didn't want to
2 go down to that level yet.

3 CHRISTINE MAINVILLE: Got it. It might
4 evolve during the course --

5 DESMOND NG: Yes.

6 CHRISTINE MAINVILLE: -- of the
7 project. Would the trial running period typically
8 involve Thales?

9 DESMOND NG: We would be there for
10 support if required, but it's usually at the prime
11 level.

12 CHRISTINE MAINVILLE: What do you mean
13 by "prime level"?

14 DESMOND NG: The EPC level, the
15 proponent level.

16 CHRISTINE MAINVILLE: I'm not sure I'm
17 following.

18 DESMOND NG: The consortium. The
19 consortium level.

20 CHRISTINE MAINVILLE: Okay. They would
21 ask you to be there or they may not.

22 DESMOND NG: Yeah, because you're
23 running trial running at the entire system level,
24 right? Not just signalling, but it's signalling,
25 rolling stock, traction power, elevators, all that

1 stuff. So it's trial running at that level.

2 CHRISTINE MAINVILLE: Okay.

3 DESMOND NG: And if there's any issues
4 for signalling, then they would ask us to fix it if
5 required.

6 CHRISTINE MAINVILLE: Okay. Would
7 you -- would Thales provide for any kind of
8 interface with the operators of the system?

9 DESMOND NG: Only at the operations and
10 maintenance training of the signalling system -
11 that is, we would train them how to use the
12 signalling system, the HMI, how we do maintenance
13 of the equipment for the signalling system.

14 CHRISTINE MAINVILLE: And would
15 provisions typically be made for ongoing training,
16 or once you train them once, then you leave it in
17 their hands?

18 DESMOND NG: We will only usually --
19 usually we do, like, a train the trainer, where the
20 customer -- the end customer, the City, would have
21 their trainers; we would train them, and then they
22 would then subsequently train their internal staff.

23 CHRISTINE MAINVILLE: Okay. Would
24 you --

25 DESMOND NG: And this would be done --

1 this would be done before the revenue service of
2 the system.

3 CHRISTINE MAINVILLE: Okay. Is there
4 ever an interface agreement between the rolling
5 stock provider and -- so if there's no direct
6 contract, as in this case, would there ever be any
7 kind of interface agreement or memorandum of
8 understanding of sorts between the rolling stock
9 provider --

10 DESMOND NG: No, no formal -- no formal
11 MOU or -- it's just a scope split matrix that I saw
12 that we provided at the RFP.

13 CHRISTINE MAINVILLE: Right. Okay. Do
14 you know if there was any clear interface document
15 prepared in this case in terms of how this
16 interface would function, other than the matrix you
17 just mentioned?

18 DESMOND NG: I checked, and we did not
19 provide any of the vehicle interface documents to
20 the rolling stock provider.

21 CHRISTINE MAINVILLE: Right. And --

22 DESMOND NG: Formally. Maybe -- maybe
23 they were presented at the technical meeting.
24 That -- so I -- I don't know. I don't know.

25 CHRISTINE MAINVILLE: And you said --

1 DESMOND NG: But from a bid perspective
2 and bid deliverable, there were none provided.

3 CHRISTINE MAINVILLE: And you said, I
4 think, earlier because you weren't asked, but would
5 Thales not ever just provide it to the -- like,
6 would it not be useful to just simply provide it
7 if -- given that it's available?

8 DESMOND NG: Yes, yeah, yeah, but --
9 maybe it was, but I don't -- I was never involved
10 in those, so I can't say.

11 CHRISTINE MAINVILLE: Okay. So you
12 don't know why it wasn't done in this case.

13 DESMOND NG: Not at the bid phase.
14 Yeah.

15 CHRISTINE MAINVILLE: Okay.

16 DESMOND NG: I don't have any records
17 of those, so...

18 CHRISTINE MAINVILLE: Okay. And would
19 you ever expect -- aside from what you're
20 referencing in terms of Thales's ICD and interface
21 document, would you not expect some other interface
22 document prepared by the consortium or the client
23 to prepare -- to plan for the interface between the
24 rolling stock provider and the signalling systems
25 supplier?

1 DESMOND NG: At the end customer level?

2 CHRISTINE MAINVILLE: Yeah.

3 DESMOND NG: Like, from the City of
4 Ottawa?

5 CHRISTINE MAINVILLE: No, no, not --

6 DESMOND NG: No.

7 CHRISTINE MAINVILLE: -- the City.
8 OLRTC, in this case.

9 DESMOND NG: No, no. They usually
10 don't do it because they -- either it's they don't
11 know -- they could either go with another rolling
12 stock provider who has their own trains, so it's
13 probably a lot of work, and they usually let --
14 it's handled between the rolling stock provider and
15 the vehicle supplier themselves.

16 CHRISTINE MAINVILLE: They let them
17 deal with the interface?

18 DESMOND NG: Yes, yes.

19 CHRISTINE MAINVILLE: That's your
20 common experience?

21 DESMOND NG: Yes, yeah. No consortium
22 has ever provided an interface on any of my bids.
23 It's thou shall, Mr. Signalling Supplier, work with
24 this rolling stock. They don't want to -- first of
25 all, then they take the risk, right? Then -- so

1 they don't want to take that risk, and so they want
2 to let the two subcontractors work it out among
3 themselves.

4 CHRISTINE MAINVILLE: Well, isn't it a
5 risk not to provide for that integration - you
6 know, not to oversee that?

7 DESMOND NG: Possibly, yes.

8 CHRISTINE MAINVILLE: So for instance,
9 I thought you mentioned earlier there would
10 typically be a systems integrator provided for by
11 the consortium or the client.

12 DESMOND NG: Yeah, yeah. They would
13 integrate, but not at the -- I mean, they would
14 integrate at a very high level, but they don't
15 usually go right down to the -- all the interfaces
16 in detail because they would expect that to be done
17 by each of the subcontractors.

18 CHRISTINE MAINVILLE: Would you expect
19 an engineer at the consortium level to be
20 overseeing this, the interface?

21 DESMOND NG: If there was one, then
22 yes, it would be at the -- at -- at the engineering
23 level.

24 CHRISTINE MAINVILLE: Like a system --
25 you mean if there was a systems integrator, it

1 would be at the engineering level?

2 DESMOND NG: Yes, yeah.

3 CHRISTINE MAINVILLE: Would you expect,
4 like, a chief engineer during the contract phase to
5 oversee those --

6 DESMOND NG: No, probably not a chief
7 engineer level because he's usually looking at the
8 overall system. I would -- it would be most likely
9 like a -- maybe at the deployment -- deployment
10 testing managerial level, and even then it would be
11 very high level. They're not going to go down and
12 say, okay, for every -- for this interface, I
13 expect there's an output/input, right? They're
14 looking at it at a functional, high level system
15 level.

16 CHRISTINE MAINVILLE: So would your --

17 PETER MANTAS: Ms. Mainville, sorry to
18 interrupt, but I just -- I don't mean to interrupt,
19 but I just want to make sure that the witness is
20 speaking from -- this is more than just
21 speculation, because I know he's here as an expert,
22 and -- or he's here as the procurement guy, and it
23 seems like we're sort of getting into what would
24 normally happen in a later phase, and I just want
25 to make sure, in fairness to the witness and in

1 fairness to you and to the process, that it's fair
2 as to the scope of his knowledge in this area.

3 CHRISTINE MAINVILLE: So -- well, I
4 know you were not involved in the contractual phase
5 on this project, but are you not frequently
6 involved in these projects, in those phases?

7 DESMOND NG: No.

8 CHRISTINE MAINVILLE: No? Okay.

9 DESMOND NG: No. Once I hand over the
10 bid to the project team, I rarely get involved
11 again.

12 CHRISTINE MAINVILLE: I see. I thought
13 you often are involved in the contractual
14 negotiations.

15 DESMOND NG: No, no. Well --

16 CHRISTINE MAINVILLE: Okay.

17 DESMOND NG: -- up to the hand-over of
18 the -- of the -- yeah, the negotiation of the final
19 contract documents, right, but afterwards, when I
20 hand it over to the project team, I rarely get
21 involved.

22 CHRISTINE MAINVILLE: Okay.

23 PETER MANTAS: But you think --

24 DESMOND NG: A lot of the stuff -- as
25 Peter mentioned, it's just based on what I kind of

1 know or I hear from people, or maybe some of it's
2 my experience, right, but --

3 CHRISTINE MAINVILLE: Okay.

4 DESMOND NG: -- the actual occurrence
5 of what happened on the Ottawa project is -- I was
6 not involved, just to be clear.

7 CHRISTINE MAINVILLE: Yeah. Okay.

8 PETER MANTAS: And, Ms. Mainville, I
9 think the next witness we've got for you, I think
10 he may have more actual knowledge and experience in
11 this particular phase of the project, if I can call
12 it that, or this aspect of what you're dealing
13 with.

14 CHRISTINE MAINVILLE: Okay. Fair
15 enough. And so this is -- you're perhaps not the
16 best placed to answer this either, but do you have
17 any clear understanding of what the ultimate issues
18 were with this LRT project in terms of some of the
19 breakdowns and derailments that were encountered?

20 DESMOND NG: No, I do not.

21 CHRISTINE MAINVILLE: Okay. And was
22 there anything that stood out for you on this
23 procurement in terms of the RFQ or RFP process?

24 DESMOND NG: No. Even from prequal to
25 RFP to final contract negotiations, there's --

1 there was nothing that stood out. It's basically
2 same old, same old for Thales. We've done this
3 many times with other consortiums, and yeah, there
4 are risks, obviously, risks at the RFP phase. You
5 don't know a lot of the details, and there are
6 unknowns, but -- but nothing stood out.

7 CHRISTINE MAINVILLE: Okay. And
8 what -- even on the risk front, there were no
9 particular risks that were slightly more enhanced
10 on this project or that stood out for you?

11 DESMOND NG: Yeah, correct. There was
12 nothing that stood out risk wise.

13 CHRISTINE MAINVILLE: Okay. Okay.
14 Okay. Well, then those are my questions, unless my
15 colleague has any or your counsel has any
16 follow-up.

17 ANTHONY IMBESI: I just have one or
18 two.

19 So you had mentioned that in the
20 subcontract, there's an obligation on the two
21 different subcontractors, when you were speaking
22 about the signalling provider and the rolling stock
23 provider, to work together; is that correct?

24 DESMOND NG: So you're saying if there
25 was a physical requirement, thou shall work with

1 the rolling stock supplier, a requirement? I don't
2 think there ever is. It's assumed you're going to
3 work with them, but our responsibility is with the
4 consortium level, right?

5 ANTHONY IMBESI: And in the assumption
6 that Thales has in terms of the work that they have
7 to put in with the rolling stock provider, could
8 you just give me a sense of how far that would go
9 in terms of what Thales would be required to do?

10 DESMOND NG: You mean working with the
11 rolling stock provider?

12 ANTHONY IMBESI: Yes, in terms of this
13 sort of assumption you just mentioned of working
14 together.

15 DESMOND NG: Okay. Okay. So we
16 would -- I mean, we know -- at the bid level, we
17 define the scope split between the signalling and
18 the rolling stock, so that is what equipment we,
19 Thales, are providing, what equipment the -- let's
20 say we're providing the onboard computers. The
21 rolling stock would provide the mounting brackets
22 and braces, et cetera, maybe some of the train
23 lines, right? So the delineation between the
24 equipment provided by Thales and the rolling stock
25 is defined in the -- in the scope split, and Thales

1 would therefore cost -- or price that equipment
2 accordingly. And then also in the scope split, it
3 physically states that Thales shall install and
4 commission and static PICO, dynamic PICO the first
5 two trains, and then Trains 3 and beyond would be
6 we're just doing the installation supervision, and
7 then the scope split also says what -- who's doing
8 the training on the signalling system, all that.
9 So down to that level, it was -- it was pretty well
10 clearly defined at the scope split level. But if
11 it comes down to, like, oh, well, the speed profile
12 changes and the schedule changes, not -- well, that
13 is -- that is at more of a system level, and it
14 would not ever be captured at the scope split
15 between both rolling stock and Thales.

16 ANTHONY IMBESI: Okay. So what you're
17 saying, then, is that Thales -- what you just
18 mentioned in terms of the assumption as to Thales
19 working together with the rolling stock provider,
20 in your view, that's set out in detail fully in the
21 scope split that you had talked about?

22 DESMOND NG: Yes, yeah, yeah. And
23 there was nothing, like, stood out from all the
24 tenders I've worked on. It just a -- pretty well a
25 standard scope split between signalling and rolling

1 stock that I've seen, so...

2 ANTHONY IMBESI: Okay. And I just had
3 one further question, and I'm taking you back to
4 earlier in your interview. You had spoken about
5 internally that there were discussions about heavy
6 snow and the performance of the system. Do you
7 recall that?

8 DESMOND NG: Those were just -- someone
9 mentioned it to me briefly, but I was not involved
10 in any of those discussions. I mean, our system
11 has worked -- the radio system has worked in all
12 different types of weather, so -- but we did do
13 that, but I know someone once mentioned, oh,
14 there's a lot of snow, and I said -- and we said,
15 oh, does it work, and -- so it was just hearsay,
16 but there was no documented or anything -- meetings
17 or anything like that.

18 ANTHONY IMBESI: Okay. And my specific
19 question was you had given us an example about the
20 Vancouver SkyTrain, and you had talked about the
21 trains operating all night to clear off the snow.

22 DESMOND NG: Yes, but that is an
23 operational procedure, and that is by the end
24 customer, BCRTC, B.C. Rapid Transit Corporation.
25 It's how they deal with heavy snow in Vancouver.

1 ANTHONY IMBESI: Right, and my --

2 DESMOND NG: We don't -- we don't
3 prescribe on how they clear snow and stuff off the
4 system, so --

5 ANTHONY IMBESI: No, my question to you
6 was going to be when you had indicated that your
7 technical team had said that your system, that the
8 Thales system, could handle the heavy snow, was
9 that based on any assumptions that the operator
10 would be doing certain things to keep the system in
11 a specific state?

12 DESMOND NG: I do not know.

13 ANTHONY IMBESI: Okay.

14 DESMOND NG: I don't know.

15 ANTHONY IMBESI: Thank you.

16 DESMOND NG: It was -- and my statement
17 was just based on, like, a coffee -- a coffee --
18 meeting at the coffee station, so...

19 ANTHONY IMBESI: Okay. Thank you.
20 Appreciate that. Those are my questions.

21 PETER MANTAS: Counsel, I have just a
22 question that I'd like to address on re-exam, if
23 that's okay.

24 CHRISTINE MAINVILLE: Please go ahead.

25 PETER MANTAS: Okay. Can you hear me,

1 Desmond?

2 DESMOND NG: Yes.

3 PETER MANTAS: Okay, good. You were
4 asked a question a little bit earlier on today by
5 Ms. Mainville about the uniqueness of the Thales
6 system, and I just want to make sure that we've got
7 your answer. I suspect -- and I don't want to put
8 words in her mouth. I suspect Ms. Mainville may
9 have been asking you something a little bit
10 broader, so I want to make sure I give you a chance
11 to answer it more broadly. Can you tell us about
12 the Thales system in a more general sense? What
13 makes it unique? Perhaps I should -- you know, the
14 right way to put it is, you know, why would
15 somebody choose the Thales system as opposed to
16 going with another system or perhaps going with the
17 Alstom signalling system? That's my question.

18 DESMOND NG: Okay. Thank you. The
19 Thales -- well, Thales first invented the term or
20 coined the term communication-based train system,
21 CBTC, 40 years ago, and we were the very first
22 signalling -- driverless CBTC system running in
23 Vancouver, and -- since 1986 Expo, and we were also
24 the first to develop the radio-based CBTC system in
25 Las Vegas in 2004. Thales's system is well known

1 by many customers around the world. It's what --
2 we think we're the Cadillac of the signalling
3 systems, with a turnkey product and many, many
4 features and customizations. And we -- as I
5 mentioned before, our system is very agnostic -
6 that is, it doesn't matter what vehicle supplier it
7 runs on. We've worked with everyone, from Alstom,
8 Siemens, Bombardier, Hyundai, Hitachi, CAF, CRRC in
9 China, and we have an extremely -- very good safety
10 record as a fully automatic driverless CBTC system.
11 It's been deployed in over 40 countries, 120 lines
12 including extensions and -- and brownfield and
13 greenfield systems of all major customers in the
14 world: London, Paris, Shanghai, New York. So
15 it's -- it's well known around the world. I guess
16 that's my marketing pitch for Thales.

17 PETER MANTAS: Thank you, Mr. Ng, and
18 thank you, Ms. Mainfield, Mr. Imbesi. I have no
19 other questions. Thank you.

20 CHRISTINE MAINVILLE: Thank you.

21 -- Concluded at 4:21 p.m.

22

23

24

25

1 REPORTER'S CERTIFICATE

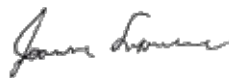
2
3 I, JOANNE A. LAWRENCE, Registered
4 Professional Reporter, certify;

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 oath
8 by me;

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 2nd day of May, 2022.

17
18 

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