

Ottawa Light Rail Commission

Gareth Wood
on Tuesday, May 3, 2022



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OTTAWA LIGHT RAIL COMMISSION
CITY OF OTTAWA - GARETH WOOD
May 3, 2022

---- Held via Zoom Videoconferencing, with all
participants attending remotely, on the 3rd day of
May, 2022, at 2:00 p.m. to 4:00 p.m.

1 COMMISSION COUNSEL:

2

3 Liz McLellan, Co-Lead Counsel Member

4 Kate McGrann, Commission Counsel Member

5

6 PARTICIPANT:

7

8 Gareth Wood, City of Ottawa

9 Jesse Gardner, Esq. Singleton Urquhart Reynolds

10 Vogel LLP counsel for Mr. Wood

11

12 ALSO PRESENT:

13

14 Colleen Rea, Stenographer/Transcriptionist

15 Chandani Joshi, Virtual Technician

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1 --Upon commencing at 2:00 p.m

2 GARETH WOOD: AFFIRMED.

3 MS. MCLELLAN: Good afternoon,
4 Mr. Wood. My name is Liz McLellan, and I'm
5 Commission counsel. I'm also joined by my
6 colleague Kate McGrann who is the co-lead counsel
7 for the Commission.

8 I'm just going to read a quick
9 introductory script to you, and then we'll proceed
10 with the questions for your interview.

11 So the purpose of today's interview is
12 to obtain your evidence under oath or solemn
13 declaration for use of the Commission's public
14 hearings. This will be a collaborative interview
15 such that my co-counsel Ms. McGrann may intervene
16 to ask certain questions. If time permits, your
17 counsel may also ask follow-up questions at the end
18 of this interview.

19 This interview is being transcribed,
20 and the Commission intends to enter this transcript
21 into evidence at the Commission's public hearings
22 either at the hearings or by way of procedural
23 order before the hearing's committee.

24 MR. WOOD: Understood, thank you.

25 MS. MCLELLAN: The script is still

1 ongoing. Sorry about that.

2 The transcript will be posted to the
3 Commission's public website along with any
4 corrections made to it after it is entered into
5 evidence.

6 The transcript, along with any
7 corrections later made to it, will be shared with
8 the Commission's participants and their counsel on
9 a confidential basis before being entered into
10 evidence. You will be given the opportunity to
11 review your transcript and correct any typos or
12 other errors before the transcript is shared with
13 the participants or entered into evidence. Any
14 non-typographical corrections made will be appended
15 to the transcript.

16 Pursuant to Section 33(6) of the
17 Public Inquiries Act 2009, that section provides a
18 witness on an inquiry shall be deemed to have
19 objected to answer any question asked of him or her
20 on the ground that his or her answer may tend to
21 incriminate the witness or may tend to establish
22 his or her liability to civil proceedings at the
23 instance of the Crown or of any person, and no
24 answer given by a witness at any inquiry shall be
25 used or be receivable in evidence against him or

1 her in any trial or other proceedings against him
2 or her thereafter taking place other than a
3 prosecution for perjury giving such evidence.

4 As required by Section 33(7) of the
5 Act, you are hereby advised that you have the right
6 to object to answer any questions under Section 5
7 of the Canada Evidence Act.

8 So we'll proceed now with the
9 questions for your interview.

10 So first, I'm going to pull up Exhibit
11 1 in your interview, and it is a copy of your CV.
12 So are you familiar with this document?

13 MR. WOOD: I am indeed, yes.

14 MS. MCLELLAN: And so I'm going to ask
15 you about some of your areas of specialization, and
16 let me know if you want me to zoom in, if that
17 would be helpful.

18 MR. WOOD: I can read that. That's
19 fine.

20 MS. MCLELLAN: Perfect. So in terms of
21 your areas of specialization, can you provide a bit
22 of background on what you mean by systems
23 engineering and process creation and what that
24 entails?

25 MR. WOOD: Yes, systems engineering is

1 sort of an over-arching process which is utilized
2 on transit projects. It's sort of manifested
3 itself from the 50's from NASA and from some
4 earlier standards, and that's really just so the
5 application of that to that particular type of
6 engineering. It comes along with more of the
7 safety critical work.

8 MS. MCLELLAN: Okay, and then how about
9 requirements, management, and specification?

10 MR. WOOD: Yeah, that's really going
11 back through a design process in trying to
12 understand what the plan requirements are, how to
13 put those into practice and to turn them into a
14 design.

15 MS. MCLELLAN: Okay. And then safety
16 and security analysis?

17 MR. WOOD: Safety and security analysis
18 is particular standards on how safety and security
19 can be assessed and particular logs can be
20 generated, and that's really the application of
21 those standards.

22 MS. MCLELLAN: Okay. And we'll return
23 to your CV in a moment, but I just want to ask you
24 generally about your prior professional experience
25 relevant to the OLRT project and your prior light

1 rail experience?

2 MR. WOOD: Yeah, sure. Where would you
3 like me to start?

4 MS. MCLELLAN: Just generally, like any
5 relevant experience --

6 MR. WOOD: Yeah.

7 MS. MCLELLAN: -- on the OLRT project.

8 MR. WOOD: As you can tell by my
9 accent, I'm originally from the United Kingdom.
10 I'm actually Canadian, but I worked on a couple of
11 projects -- light rail projects in the UK. Moseley
12 Tram and Edinburgh Tram. Before that I was in
13 really high speed metro, high capacity metro and
14 some community rail projects because light rail
15 hadn't really -- it had gone through a bit of a
16 glut where it hadn't been utilized in some of the
17 cities and, of course, the then Moseley Tram and
18 Edinburgh Tram came along, and I was involved in
19 that.

20 And then the flavour of the industry is
21 such that light rail is really cropping up in many
22 cities, which are expanding beyond the million in
23 population. So they find a necessity to put that
24 light rail system, and so that's really where the
25 market's taking most transit engineers at the

1 moment and metros, of course.

2 MS. MCLELLAN: Okay, and so is there a
3 list, or can you provide a list of the prior light
4 rail projects that you've worked on?

5 MR. WOOD: Yeah. As I said, I worked
6 on Edmonton northeast extension, I worked on
7 Edinburgh Tram, and I worked on Moseley Tram.

8 MS. MCLELLAN: And what does your prior
9 P3 experience entail?

10 MR. WOOD: P3 I worked on Jubilee line
11 extension, I also -- Moseley Tram was going to be a
12 P3 and also Edinburgh Tram was a P3 as well.

13 MS. MCLELLAN: So I'm going to share my
14 screen again. And I want to speak about
15 specifically your -- I believe this is your initial
16 experience with OLRT project.

17 MR. WOOD: Yeah.

18 MS. MCLELLAN: So in terms of your
19 title, so you are the lead for vehicles
20 communications -- pardon me, you were the lead for
21 vehicles communication systems, signalling, CBTC
22 and traction power, OSC lead within the rail
23 implementation team. So what did this role entail
24 overall, and then we'll go into the specific areas?

25 MR. WOOD: It's really managing the

1 output from RTG. And really it's, you know,
2 looking at some of the design aspects, looking for
3 the compliance to get project agreement. That's
4 solely the role of the lead. And also to interact
5 with some of the City's engineers, CTP, who were
6 assisting us with some of the technical evaluation.

7 MS. MCLELLAN: And so in terms of being
8 a lead for vehicles, what does that entail?

9 MR. WOOD: Yeah, really just to manage
10 the various aspects of the project and to report to
11 -- at the time I was reporting to Mr. Holder and
12 Mr. Craig. Mr. Craig initially. And really
13 understanding the progress of the project and
14 reporting any particular issues through a number of
15 reporting mechanisms we had within the project
16 team.

17 MS. MCLELLAN: And then so we'll dig
18 into those later, but in terms of communications,
19 what did that entail for your role?

20 MR. WOOD: Yes, we had regular biweekly
21 meetings. We used a mechanism called a quad which
22 was a risk analysis of the project and where it was
23 going, and that was basically collated and reported
24 to I think within the various committees in the
25 City.

1 MS. MCLELLAN: When you say risk
2 analysis, what did that involve?

3 MR. WOOD: Scheduled risk, cost risk,
4 as best we could. Technical risk as well,
5 forthcoming activities, things basically, you know,
6 I would say that could be troublesome on the
7 horizon. So things like that on a biweekly basis.
8 And also to really engage with the other leads as
9 well to understand. Because it's a large project,
10 we needed to know what was happening between each
11 other.

12 MS. MCLELLAN: What were the steps
13 taken once a risk was identified?

14 MR. WOOD: Some of the risks were
15 entered into -- I've forgotten what the system is
16 called. There was -- the City had created a system
17 in which we could enter risks and scoring
18 mechanisms, so there would be a portion of money
19 and time, et cetera, depending on what the risk
20 was.

21 MS. MCLELLAN: Okay. And can you,
22 sitting here today, think of any examples of the
23 risks that were identified?

24 MR. WOOD: I think one of the earlier
25 risks would have been some of the requirements

1 definition by RTG.

2 MS. MCLELLAN: The what?

3 MR. WOOD: Requirements definition.

4 The requirements gathering process.

5 MS. MCLELLAN: Okay, so what was
6 involved with that in terms of identifying the --

7 MR. WOOD: It would have been entered
8 into as with a nominal sum and a sort of a time
9 expiry in there.

10 MS. MCLELLAN: Okay. And then in terms
11 of your role with respect to signalling and CBTC,
12 so for the record, can you provide what CBT stands
13 for -- CBTC stands for?

14 MR. WOOD: Computer-based training
15 control. It's really a -- it's a guidance control
16 system, if you like, for the vehicle to provide
17 safe operation along a track so they don't collide
18 with one another.

19 MS. MCLELLAN: Okay. And then so
20 particularly with signalling, how were you involved
21 with signalling on the project?

22 MR. WOOD: Signalling, once again I'm
23 looking at compliance of the signalling system.
24 There's a series of requirements in the project
25 agreement which we adhere to. And I was involved

1 with some of the early meetings with Thales in
2 Toronto with going over the overall design proposal
3 I would say.

4 MS. MCLELLAN: Okay. And so were you
5 involved in the actual selection of the signalling
6 system requirement?

7 MR. WOOD: No, that's solely for RTG to
8 determine. The RTG had a variety of different
9 signalling system manufacturers on the books and it
10 was up to them to choose the best fit for that
11 project.

12 MS. MCLELLAN: So how was the best fit
13 determined for the project?

14 MR. WOOD: I wouldn't know. That would
15 be RTG to determine. It was their risk to design
16 that system.

17 MS. MCLELLAN: Okay. Then can you
18 provide a bit of background on what traction
19 power/OSC lead and what -- or OCS --

20 MR. WOOD: Sure. Transaction power is
21 the distribution of power to the electric vehicle.
22 In this case it was through an overhead catenary
23 system of suspended wire. It goes through a
24 mechanism called a pantograph. This is then
25 connected to a motor, very simply, and then the

1 return current is passed through the return rail
2 and back to the power supply. It's a very simple
3 system. It's been around since the late 1800's.

4 MS. MCLELLAN: And then before we get
5 into your project accomplishments, just generally
6 who did you report to in your role?

7 MR. WOOD: Yeah, as I said, I reported
8 to Mr. Gary Craig for an early part of the project,
9 and I think about 2015, 2016, I then reported to
10 Mr. Richard Holder.

11 MS. MCLELLAN: Did you oversee anyone
12 in your role?

13 MR. WOOD: Did I oversee. I had a
14 couple of students with me. And primarily I had
15 four people from CTP who supported me.
16 Mr. Barstow, Mr. Tabolt, Mr. Carney, and Mr. Rose,
17 for different disciplines.

18 MS. MCLELLAN: And then did you take
19 over for anyone in 2011 or was this your role --

20 MR. WOOD: Yes, I did. You're right to
21 question that. I took over from another Gareth,
22 Gareth Jones. He preceded me and did some of the
23 earlier work on the project agreement.

24 MS. MCLELLAN: What did his earlier
25 work entail?

1 MR. WOOD: His early -- well, I joined
2 a little bit later, obviously, than him. He would
3 have set up the initial project, I suspect, with
4 the team. He was primarily at the time engaged in
5 some market standing with some of the vehicle
6 manufacturers that he was trying to gather
7 information that would give a project agreement
8 which would be as -- let me see, as comprehensive
9 to allow all the vehicle manufacturers to be able
10 to bid on the contract.

11 MS. MCLELLAN: What was the
12 transition -- I've forgotten his name. His first
13 name was Gareth as well, I think you said -- what
14 was the transition from him passing along his role
15 and responsibilities to you?

16 MR. WOOD: I think it was just some --
17 It was a request from Mr. Craig. When Gareth Jones
18 had decided to depart, he asked me to step into
19 those shoes.

20 MS. MCLELLAN: Okay. And do you know
21 why Mr. Jones decided to depart?

22 MR. WOOD: I think he -- he had some
23 other family engagements somewhere else. A winter
24 out of the country. I think his wife is in
25 government and she had to go somewhere else on some

1 new job.

2 MS. MCLELLAN: Okay, so looking
3 specifically at your project accomplishments, can
4 you provide a bit of background on the first
5 accomplishment which says provided technical
6 support and program management for the City's
7 Confederation line?

8 MR. WOOD: Absolutely. So as you can
9 imagine, it's quite a complex system as such. So
10 I'm looking at basically trying to pull the four
11 people I mentioned, talk to them, understand how --
12 get different perspectives, some of the technical
13 issues that RTG may or may not provide and some of
14 the data, and we'd go and do some assessment of
15 some of that in terms of its overall compliance.
16 So they would be used for more detailed assessment
17 of some of the proposals that RTG had made.

18 MS. MCLELLAN: Okay. And then in terms
19 of your accomplishment of managing, I assume you
20 were the managing liaison with vehicle exterior,
21 accessibility and interior styling to suit the City
22 requirements?

23 MR. WOOD: Yeah, so one of the earlier
24 parts to the project there was a delivery of a
25 mockup, which is basically I would say a third of

1 the train. That was brought to Ottawa for public
2 review. It's essentially a dead vehicle. It
3 doesn't have any real technical interior. It's
4 just more of cosmetics and livery et cetera, and
5 that was delivered to show people what they were
6 getting to get some excitement into the City and
7 also get feedback from people like the ability
8 impaired to understand how their needs would be
9 met.

10 MS. MCLELLAN: Okay. So other than
11 looking at the ability impaired and how their needs
12 would be met and creating general excitement, was
13 there any other, like, substantive purpose to the
14 vehicle mockup?

15 MR. WOOD: Well, there's obviously the
16 cab area would be the first time that the driver
17 interfaced, the seating, the desk would be exposed
18 and how that arrangement works with the driver.

19 MS. MCLELLAN: And in terms of being a
20 liaison, who were you a liaison between?

21 MR. WOOD: I was primarily working with
22 RTG and OC Transpo.

23 MS. MCLELLAN: In terms of City
24 requirements for the vehicle exterior,
25 accessibility and interior styling, what were some

1 of the City requirements that you had complied
2 with?

3 MR. WOOD: There wasn't a lot of City
4 requirements on that. It was merely some approval
5 and submission of colours, et cetera. And in terms
6 of what was delivered, Alstom was trying to provide
7 a number of different options to the City of which
8 the City could have a choice.

9 MS. MCLELLAN: What were those options?

10 MR. WOOD: It's difficult to describe
11 because they were more -- they were more sort of
12 cosmetic options like colour schemes, et cetera.
13 There was a number of slides presented earlier on
14 which were -- which provided the interior and
15 exterior options.

16 MS. MCLELLAN: And what were the
17 technical specifications, if you can recall?

18 MR. WOOD: There was no real technical
19 specifications for that because, as I say, it was
20 more a subjective thing. I think there was what we
21 call the tulip design. The front of the nose. The
22 Alstom design itself leant itself to some certain
23 customisation for different cities, and I can't
24 remember which City in France they use a silk worm
25 approach to the front of the nose. Here the

1 suggestion was to have a tulip side to meet with
2 the Ottawa sort of historical references there.
3 And there was a number of different ways of really
4 displaying and showing the vehicle to the public.

5 MS. MCLELLAN: Are you aware of how --
6 I think Ms. McGrann has some questions.

7 MS. MCGRANN: Were you involved in
8 receiving requests for feedback on the design book
9 and providing City feedback on the design book to
10 RCG after they had been selected as the successful
11 proponent?

12 MR. WOOD: How do you mean,
13 Ms. McGrann?

14 MS. MCGRANN: I mean were you involved
15 in assisting the City in responding to any design
16 request with respect to the vehicle that came from
17 Alstom through RTG?

18 MR. WOOD: I did get involved with a
19 lot of discussions between OC Transpo and RTG, sort
20 of in between the two groups, yes.

21 MS. MCGRANN: With respect to the
22 design of the vehicle?

23 MR. WOOD: No. Depends what you mean
24 by design. The structural technical design, no
25 because that would be Alstom to do that. But in

1 terms of colour schemes and things like that, yes,
2 I was involved in that.

3 MS. MCGRANN: What about the
4 configuration of the interior and the inclusion of
5 things like handles for passengers to hold onto
6 when they ride on the vehicle?

7 MR. WOOD: Yes, I think the handles
8 were added on somewhat later, I think, as a
9 variation. I can't remember. It wasn't specific
10 PSOS requirement at the time. That was probably
11 after I left, I think.

12 MS. MCGRANN: That was after you left?

13 MR. WOOD: I think so, yes.

14 MS. MCGRANN: Are you aware of any
15 other variations to the interior of the vehicle
16 that were introduced outside of the PSOS after the
17 selection of RTG?

18 MR. WOOD: Yes, there was the -- there
19 was an interior call that was pushed into the
20 double door area and there was like a T-bar that
21 was inserted and raised.

22 MS. MCGRANN: Can you speak to the
23 timing of those inclusions?

24 MR. WOOD: Off the top of my head, I
25 can't. It's around about 2014, I think.

1 MS. MCGRANN: Was that late in the
2 project to be including those changes, in your
3 view?

4 MR. WOOD: Was that late? No, I don't
5 think so because the original vehicle already had
6 provision for a centre pole in the actual design,
7 in some of the early design layouts. So it was
8 always presented there. But I think the
9 requirement was to have a number of handholds
10 inside the vehicle, so the vehicle met that
11 requirement. I think the pole was -- just provided
12 some additional ability for people to sit around in
13 an area or stand around in an area.

14 MS. MCGRANN: I've seen reference to
15 the phrase tripole, is that what we're talking
16 about?

17 MR. WOOD: Yes, that's correct. It's
18 got three lobes on it.

19 MS. MCGRANN: To your knowledge, did
20 the timing of the inclusion of the tripole have any
21 impact on the manufacturing schedule for the
22 trains?

23 MR. WOOD: I can't imagine it would
24 because essentially if it was the original, it
25 should have the base connections for it. The rest

1 is clamped onto the handles above and ceiling, and
2 so there's no real impact as far as I know.

3 MS. MCGRANN: Thank you very much.

4 MS. MCLELLAN: Are you aware of --
5 we'll return back to your CV, but are you aware of
6 how the vehicle was finally chosen by RTG or what
7 that process was?

8 MR. WOOD: Yes, I am. Yes. So there
9 was an assessment of the bid phase. RTG was quite
10 clever. It provided a number of different car
11 builders and a number of different cycling
12 manufacturers and sort of mixed them. It had the
13 ability to mix and match whoever it liked, so it
14 gave itself a lot of flexibility, and I think at
15 the end of the day, it went for -- it went for --
16 they chose Alstom and Thales, perfectly reputable
17 manufacturers, and that was probably a good choice.

18 MS. MCLELLAN: So in terms of other
19 projects you worked on, is that rare to mix and
20 match vehicles with signalling systems?

21 MR. WOOD: No, in this type of bid you
22 keep your options open when you're bidding. It
23 gives you the flexibility then possibly bidding --
24 getting -- manufacturers are getting a more
25 competitive edge.

1 MS. MCLELLAN: And in terms of other
2 projects, what has been your experience with sort
3 of mixing and matching, and have you seen that done
4 before?

5 MR. WOOD: Yes, it's quite common to
6 have a different vehicle manufacturer and a
7 different signalling manufacturer. It's very
8 common. I worked for a cycling manufacturer and we
9 worked with a number of different car manufacturers
10 and, indeed, Alstom as well.

11 MS. MCLELLAN: In terms of coordinating
12 a different signalling manufacturer and a different
13 intervening manufacturer and how they interact with
14 one another, what's typically required?

15 MR. WOOD: It's quite a detailed
16 process because your cycling system is safety
17 critical and you have to marry that with a safety
18 critical system in the vehicle. It needs some
19 rigorous processes, and RTG would have to manage
20 that themselves, but with the proper experienced
21 people, that shouldn't be too onerous.

22 MS. MCLELLAN: And what would be
23 involved in the rigorous process?

24 MR. WOOD: Yeah, it would be defining
25 what the interfaces are, determining some of the

1 risks, the hazards associated with that system,
2 whether the components are new or novel and really
3 defining where those black boxes connect to one
4 other. I'm simplifying somewhat, but in terms of
5 defining what those interfaces are between the two
6 parties.

7 MS. MCLELLAN: And are you aware if
8 that work was done on this project in particular?

9 MR. WOOD: As far as I know it was.
10 I'm not part -- I was never part of the testing, so
11 I don't know how successful that marrying of the
12 two systems was.

13 MS. MCLELLAN: What were you aware of
14 in terms of the efforts for marrying the two
15 systems?

16 MR. WOOD: Not very much because that
17 would have been the management processes within
18 RTG. They would have been managing the Alstom
19 vehicle and also the interface with Thales. But I
20 did get involved in some of the latter assessment
21 parts with our safety assessors, but apart from
22 that, not a great deal of depth in terms of what
23 they were doing behind the scenes.

24 MS. MCLELLAN: And what was your
25 involvement in the latter part that you referenced?

1 MR. WOOD: Yeah, I was -- I departed I
2 think in the latter part of 2016. And I was off
3 the project for a number of months, and then
4 Richard had asked me to come back in to act as a
5 safety over to liaison, so work between TUV, the
6 safety auditor and the artifacts, the documents
7 that RTG were producing.

8 MS. MCLELLAN: So I think we're going
9 to turn to your later role in a minute, but just to
10 close up your project accomplishments for your
11 initial role, in terms of managing the evolution of
12 the design scope through the new Infrastructure
13 Ontario alternative financing procurement method,
14 what did that involve?

15 MR. WOOD: Yeah, so I got involved with
16 -- obviously there was a -- when I joined the
17 overall project had a different slant on it. It
18 was more of a design build, and it evolved into
19 this IO, Infrastructure Ontario, project which was
20 loosely based on a hospital design, and it required
21 some thought in how to manipulate the existing data
22 into the new project agreement and PSOS, the
23 project operating specification.

24 MS. MCLELLAN: So what was involved in
25 that process when the procurement model changed?

1 MR. WOOD: Yeah, it's a good question.
2 The design build tends to be more prescriptive, and
3 the challenge is then you take out the
4 prescriptiveness and allow the flexibility for the
5 proponent to design and take whatever route they
6 would like within the boundaries of what they
7 originally intended. And that's quite a hard
8 process to go from very detailed specification to
9 something more general given the flexibility and
10 not constraining the actual proponent.

11 MS. MCLELLAN: What were the practical
12 implications that you noticed on that change with
13 respect to this project?

14 MR. WOOD: The practical parts of that
15 were really to try and keep it as open and less
16 detailed as possible and not lead the proponent
17 into certain design decisions.

18 MS. MCLELLAN: What impact did that
19 have on the City?

20 MR. WOOD: Well, apart from additional
21 work to be able to go through and reassess what had
22 been done before and clean up the overall PSOS to
23 make it more flexible to give flexibility to the
24 proponents.

25 MS. MCLELLAN: Ms. McGrann, I don't

1 know if you have any follow-up components on that
2 piece.

3 MS. MCGRANN: Were there any areas in
4 the PSOS where you thought to make the requirements
5 less prescriptive and ultimately the requirements
6 stated more prescriptive than you would have
7 preferred?

8 MR. WOOD: Yeah, there's always a
9 balance there, Ms. McGrann, on getting the right
10 prescriptiveness, but given the flexibility. One
11 of the things that we did put in later on, and it
12 came in quite late, was that the decision earlier
13 on to environment assessment was to have a light
14 rail system and the decision was taken to the City
15 to actually open up it to become a light metro. To
16 give you an analogy, the sky train system has the
17 same capacity as the City of Ottawa, and so the
18 flexibility was there for a proponent to even
19 propose a sky train type metro, light metro. So
20 that gives them more flexibility in terms of what
21 they could propose.

22 MS. MCGRANN: Did that proposal remain
23 in the PSOS, that opportunity to propose a light
24 metro as opposed to light rail vehicle?

25 MR. WOOD: Yeah. I can't remember how

1 the wording was done on that, but it just opened it
2 up and I'm sure -- I think it was OTP that
3 suggested some light sky train. I can't remember
4 which bidder it was, but somebody came back with a
5 light metro proposal.

6 MS. MCGRANN: With respect to the
7 signalling system, was there any specific
8 signalling provider that the City had in mind when
9 designing the PSOS for the CBTC?

10 MR. WOOD: Not really. Not at all. I
11 mean they're all very good companies. Some have
12 got a better reputation than others. The idea was
13 really to try and get as many bidders at the table
14 to give the best -- really the best competitive
15 advantage and to get the best responses back from
16 the bidders.

17 MS. MCGRANN: So in your view and with
18 your experience with CBT systems, did the PSOS as
19 it pertained to the CBTC lean in favour of one
20 particular supplier or one group of suppliers?

21 MR. WOOD: No, not at all. The
22 terminology used in there was as open as possible
23 to try and encompass all the different
24 manufacturers.

25 MS. MCGRANN: Thank you very much.

1 MS. MCLELLAN: So moving on to the list
2 of accomplishments that you assessed the
3 preliminary design developed by Capital Transit
4 Partners, what did that involve?

5 MR. WOOD: That is what I've just been
6 saying, the preliminary design that was created,
7 there was some initial work that CTP had actually
8 done in terms of design itself and really was to
9 take that and turn it into something which could be
10 utilized for the PSOS itself. So some initial
11 design work done and documentation.

12 MS. MCLELLAN: And what was that
13 initial design work done? Like, what did that
14 involve?

15 MR. WOOD: It would have been early
16 studies on things. Certainly with vehicle --
17 there's the vehicle assessment. I'm trying to
18 think. There was different types of methods of
19 overhead catenary, I think. I'm struggling to go
20 back that far, to be honest. There was just a
21 bunch of data that was there. I think it was
22 probably going to be used for the early design
23 proposal for the design build.

24 MS. MCLELLAN: Okay. And then who was
25 involved in assessing design following you looking

1 at the preliminary design?

2 MR. WOOD: Okay, so when we say assess
3 the design, the assessment here, this is the data
4 that feeds the PSOS. The project itself is really
5 looking for compliance and not assessing design.
6 It's to see how far RTG or the proponents would
7 come in with a compliant design.

8 MS. MCLELLAN: Okay. You also list
9 regular quality auditing and forensic analysis in
10 your accomplishments. What does that entail?

11 MR. WOOD: Sure. So we did some --
12 obviously, as part of ISO 9001 process there would
13 be -- we'd be raising NCR's, non conformance
14 reports for certain things that were missing. That
15 would be part of the auditing process the City
16 would go through. There would be obviously as a
17 result of raising the NCR and the findings of that,
18 there would be a certain analysis that goes behind
19 there in terms of why did it go wrong? Why did
20 this happen? How can we correct that? And there
21 could be internal NCR's or it could be external
22 NCR's with RTG.

23 MS. MCLELLAN: Sorry, this is the NCR's
24 are host selection of RTG's?

25 MR. WOOD: Exactly, yeah.

1 MS. MCLELLAN: And can you think of
2 some examples of NCR's and what was done to solve
3 those issues?

4 MR. WOOD: Off the top of my head, no,
5 I can't. I'm just trying to think. No, I really
6 can't remember that far back in detail.

7 MS. MCLELLAN: In terms of, you know,
8 vehicle NCR's or anything like that?

9 MR. WOOD: The only thing I can
10 remember that generated a lot of potential
11 noncompliance areas was the initial review of the
12 mockup, and I did a report for that, and there was
13 some findings in there in terms of -- yeah, things
14 of compliance, some of the things that were
15 possibly compliant but had to be seen on the
16 vehicle, and then some things that which you
17 probably -- you just jogged my memory. For
18 instance, the windshield wiper and its position on
19 the windshield, et cetera. I don't think an NCR
20 was raised on that, but it was raised on that
21 report.

22 MS. MCLELLAN: And what were some of
23 the additional findings from your report?

24 MR. WOOD: As I say, I'm just trying to
25 go deep in my memory here. It would have been

1 things like the lock on the side of the sliding
2 window on the cab, and things that had been asked
3 for in the -- in the PSOS. They may have not been
4 on the mockup because of the constraints of the
5 mockup and what have you. But there may been there
6 on the vehicle itself and on vehicle -- while the
7 vehicle was manufactured.

8 MS. MCLELLAN: And what was done to
9 ensure that the PSOS requirements that were not on
10 the mockup were on the final vehicle that was
11 actually run?

12 MR. WOOD: Apart from generating the
13 report, I didn't have any control over that once it
14 had been generated. I think this is a little bit
15 before I left the City anyway. So that would have
16 had to have been closed out at some point.

17 MS. MCLELLAN: Who did you address the
18 report to or who would have received it?

19 MR. WOOD: OC Transpo had a copy of
20 that. Richard Holder had a copy of that. And so
21 it was in the right place to be dealt with.

22 MS. MCLELLAN: Okay. And can you think
23 of an example today of different PSOS
24 specifications that you had flagged in the report
25 as not being there that did not make their way into

1 the final vehicle?

2 MR. WOOD: I wouldn't know because I
3 wasn't part -- I didn't get to the first vehicle.
4 I think I got on there once, so I've never actually
5 been on the vehicle apart from being a passenger.

6 MS. MCLELLAN: Okay. Ms. McGrann, I
7 don't know if you have any follow-up questions on
8 that.

9 MS. MCGRANN: Were there any aspects of
10 the RFP template, which I believe you said was
11 based on a hospital project; is that right?

12 MR. WOOD: That's correct.

13 MS. MCGRANN: Were there any aspects of
14 the RFP template that posed particular challenges
15 when it was being adapted for the Light Rail
16 Transit project?

17 MR. WOOD: Yes, I think there's
18 obviously the -- a building is very different to a
19 complex system that has safety involved in it.
20 That was sort of known. We put enough words inside
21 the PSOS to be able to sort of manage that. They
22 did require some elaboration, of course, but some
23 time was spent on how that would be achieved.

24 MS. MCGRANN: Did this PSOS speak at
25 all to the need for systems integration that you've

1 described arising out of the intricacies of the
2 system, et cetera?

3 MR. WOOD: Yeah, one of the earlier
4 things I brought up was the system's assurance
5 aspects of this. That was communicated very early
6 on to Mr. Poon -- Mr. Allan Poon. There was some
7 particular words that I created to go in there, and
8 that was provided to CTP to add into the PSOS. I
9 think what turned out to be -- I think there was a
10 reference to the N50126, the European standard for
11 safety, and also a reference to IEC15288 which is
12 pretty much the de facto systems engineering
13 standard.

14 MS. MCGRANN: A couple of questions.
15 Allan Poon, is that a gentleman who works for
16 Infrastructure Ontario?

17 MR. WOOD: That's correct.

18 MS. MCGRANN: I think you said IC5288;
19 is that right?

20 MR. WOOD: IEC15288.

21 MS. MCGRANN: IEC?

22 MR. WOOD: International Electro
23 Committee. I can't remember what the IEC stands
24 for.

25 MS. MCGRANN: Could you explain to me

1 generally what that would require of somebody who
2 is working on the project?

3 MR. WOOD: Yes, it's a known issue that
4 complex projects require super management in terms
5 of how the different disciplines are brought
6 together. And the system assurance process makes
7 sure that the disciplines don't rush ahead of one
8 another. There's some assessment of how you move
9 to the next stage of the project in terms of one
10 discipline would leave another behind. It's a
11 standard process for a lot of railway projects.

12 MS. MCGRANN: Was it your understanding
13 that that particular standard was made a
14 requirement of the RFP and subsequently the project
15 agreement?

16 MR. WOOD: Yeah, with 50126 sort of
17 forces that as well. It's more the safety
18 standard, but it has a rigorous approach to system
19 assurance as well and systems assurance planning.
20 If you marry that with 15288, it becomes quite a
21 solid and robust process to follow. It would be an
22 industry standard really for railways.

23 MS. MCGRANN: I think you referred to
24 that as a super management approach. Did you use
25 that term?

1 MR. WOOD: I did use that, yeah. It's
2 a very -- the safety critical world is quite a
3 rigorous process. And I was trying to explain it
4 to somebody. You're basically managing the same
5 passengers as a Boeing 767. You're trying to bring
6 it in safely into each station. I think the public
7 are maybe not aware of the complexities behind that
8 and how the companies are structured to deliver
9 that safety.

10 MS. MCGRANN: Okay. And just to be
11 clear, it's your understanding that both of those
12 standards that you identified and NI50126 and
13 IEC5288 are requirements in the project agreement,
14 yes?

15 MR. WOOD: Yes definitely. 15282 I
16 can't remember if it's in Schedule 7, I can't
17 remember. It was -- yeah, it was some of the
18 cities chose to use IEC15288, and I think 50126 was
19 referenced in Schedule 152 part 4.

20 MS. MCGRANN: I apologize if you
21 answered this question and I didn't catch it, but
22 did you have any involvement in reviewing any
23 aspect of the responses to the RFP for technical
24 compliance with the areas that you were involved in
25 drafting?

1 MR. WOOD: Yeah, I was involved in some
2 of the assessment of the data that came in, yes.

3 MS. MCGRANN: Do you recall any
4 particular concerns arising on your part in respect
5 of the way that the parties proposed to manage the
6 systems integration that we've been discussing?

7 MR. WOOD: Yeah, I think they were all
8 particularly weak on this aspect.

9 MS. MCGRANN: Do you know if anything
10 was done before the award of or the selection of
11 the preferred proponent, let's say, to address the
12 weakness with respect to systems integration in any
13 of the proposals?

14 MR. WOOD: Honestly, I can't remember
15 on the -- what was -- there were -- we had some RFI
16 process going as part of the bid phase. There may
17 have been questions and responses provided on that.
18 This is going back a long way, and it was a very
19 quick process over a number of weeks. There may
20 have been questions on that that we responded.

21 MS. MCGRANN: Just for the sake of the
22 record, RFI is a request for information?

23 MR. WOOD: Information, that's correct.

24 MS. MCGRANN: Were you involved at all
25 in the negotiation of the project agreement or

1 advising on aspects of the project agreement that
2 fell within your areas of expertise?

3 MR. WOOD: No. That was probably older
4 than me. That was more looking at the technical
5 aspects.

6 MS. MCGRANN: Can you speak at all to
7 the approach that was taken to ensuring that the
8 systems integration piece was included in the
9 project agreement?

10 MR. WOOD: I did actually write to
11 Mr. Poon and Mr. Charles Wheeler and had provided
12 some words in terms of adding that into the PSOS.

13 MS. MCGRANN: Did you do that on your
14 own initiative or were you asked to undertake that?

15 MR. WOOD: I did that on my own
16 initiative because from other experiences of other
17 projects, it's necessary for managing this type of
18 complexity.

19 MS. MCGRANN: Do you know if the
20 language that you suggested was included in the
21 project agreement?

22 MR. WOOD: It wasn't included.

23 MS. MCGRANN: Did you have the
24 opportunity to review what language was included in
25 the project agreement in place of what you had

1 suggested?

2 MR. WOOD: No, I didn't have an
3 opportunity to do that.

4 MS. MCGRANN: Okay. Following the
5 award of the project agreement, did you do any work
6 on reviewing or overseeing the systems integration
7 work that was done by RTG on the project?

8 MR. WOOD: No, systems integration is a
9 lot later after I'd left. It's mainly a physical
10 process of people being on site and overseeing
11 that. I wasn't involved in that at all.

12 MS. MCGRANN: Following the award of
13 the project agreement, were the City and RTG
14 producing the sort of over-arching system-wide
15 documents that you would expect to see to help
16 organize the work that would be done going forward?

17 MR. WOOD: No, I think some of the
18 earlier information, the groundwork information,
19 was not there.

20 MS. MCGRANN: Could you describe to me
21 what you thought should have been there by way of
22 groundwork information that was not?

23 MR. WOOD: Yeah, some -- the initial
24 part of this is really the hazard analysis, the
25 grounds analysis, and the requirements management

1 process to take what PSOS delivers and it probably
2 provides a description of, I'm going to guess, like
3 30, 40 percent of what's required to give the
4 flexibility. And RTG is supposed to fill in the
5 rest and develop the system to accommodate the
6 performance requirements.

7 MS. MCGRANN: Did it cause you any
8 concern that that groundwork was not being done?

9 MR. WOOD: Yeah, I think we were
10 chasing the requirements management for a number of
11 months. It's not untypical for a project like
12 this, the civil part tends to proceed very quickly.
13 There's a lot of pressure for bids on the ground
14 and get the shovel in the ground. It's not
15 uncommon for that to happen.

16 MS. MCGRANN: Just so that I
17 understand, your resume lists you as being involved
18 in this project from 2011 to 2017. Were you
19 involved in the project continually throughout, or
20 were there periods of time in which you weren't
21 involved?

22 MR. WOOD: Yeah, from the 2016 period
23 to 2017 it's very patchy. I was just basically
24 sort of filling in providing some sort of handover,
25 if you like. I didn't start ramping up until the

1 end of the 2017 period in which I came in as the
2 liaison.

3 MS. MCGRANN: And the chasing that you
4 did, that you just described, were you successful
5 in implementing or having implemented what you were
6 hoping to get done there?

7 MR. WOOD: I'm sorry, could you say
8 that again.

9 MS. MCGRANN: I can try. I'm trying to
10 read my own handwriting here, unfortunately. I'd
11 asked you about whether you had any concerns about
12 the groundwork that you had described not being
13 done, and I think that you said that you were
14 chasing requirement management work for some time.
15 So was what you were hoping to be put in place
16 ultimately put in place?

17 MR. WOOD: Yes, it was. It came very
18 late in the program, more later than would be
19 expected, but it was done and some traceability was
20 there. So there was a lot of activity towards the
21 end of the project to fill in the gaps.

22 MS. MCGRANN: And in terms of gaps,
23 gaps in what?

24 MR. WOOD: Gaps in the definition of
25 the requirements. The hazard log had not matured

1 to a state where the information was available, so
2 a lot more analysis had to happen. And, of course,
3 the inclusion of the operator in that as well.

4 MS. MCGRANN: Are those areas really
5 focussed on safety and safety management?

6 MR. WOOD: Yes, in the latter part of
7 my role was with safety liaison. So I was looking
8 at the transfer of residual risks that come from
9 RTG that couldn't be accommodated in the design.

10 MS. MCGRANN: And those would then have
11 to be accommodated by way of -- procedures?

12 MR. WOOD: Exactly right, yes.

13 MS. MCGRANN: With respect to --and I'm
14 going to use some basic language here, so just bear
15 with me. The integration between the CBTC and the
16 trains, for example, during the time that you were
17 working on the project, were the kinds of things in
18 place that you would expect to see in place if the
19 integration of the different providers on RTG's
20 side for the train and the signalling system were
21 going to be successful?

22 MR. WOOD: I wasn't part of that
23 integration, so I wasn't aware of what was going
24 on. I'd really sort of concluded by the end of the
25 design phase, so I'm not party to that information.

1 MS. MCGRANN: So your work on
2 signalling and traction power, did that also come
3 to an end at the end of the --

4 MR. WOOD: Absolutely, in 2016, yeah.

5 MS. MCGRANN: Okay. Thank you very
6 much for letting me interrupt.

7 MR. WOOD: No problem.

8 MS. MCLELLAN: Turning back to your
9 project accomplishments, so we also have here
10 involvement in the development of a preliminary
11 engineering submission for tender, subsequent
12 changes to the AFP method, and production of the
13 content in the project agreement and project output
14 specification. So can you break that down your
15 involvement in the development of the preliminary
16 engineering submission for tender; what did that
17 involve?

18 MR. WOOD: Really just to make sure
19 that the original from the engineer was sensible in
20 terms of what we expected for light rail system.
21 And really then to take that into and massage that
22 to become more -- less prescriptive for the PSOS
23 and the project agreement.

24 MS. MCLELLAN: And then in terms of the
25 subsequent changes to the AFP method and the

1 production of the contents and the project
2 agreement and the PSOS, how does that all come
3 together?

4 MR. WOOD: Well, the AFP method here
5 was, as I said, I think it was from hospital, don't
6 quote me on that, it could be from another project,
7 but obviously there was particular things that
8 would be biased towards hospital, which would not
9 be applicable to a safe rail system, if you like.
10 So really, just the massaging of the words to
11 provide that additional clarity.

12 MS. MCLELLAN: You mentioned that you
13 worked on other light rail projects. Had you seen
14 this happen before in terms of the AFP method and
15 requirements translated from something like a
16 hospital to light rail system?

17 MR. WOOD: Not generally. It's odd,
18 but then it could be expected because the early AFP
19 method that I helped produce was made successful
20 and they wanted to follow that approach and convert
21 it into something they could use for other transit
22 projects.

23 MS. MCLELLAN: Okay. And then in terms
24 of -- I think I touched on this, but it says you
25 managed and assisted in the generation of the

1 vehicles specifications, CBTC, and train control
2 system, communications and systems, power supply
3 and overhead design. What did this involve?

4 MR. WOOD: Really, once again, we're
5 going through the various subsystems of the PSOS.
6 Once again, making sure they're clear and
7 understandable. They've got the flexibility in
8 there to allow different bidders to provide designs
9 to accommodate this. And really, they're tidying
10 them up. One of the important aspects of the
11 writing of the PSOS and the requirements is that
12 they become something that's easily testable for
13 clarity and the actual wording is useful for a test
14 output, if you want.

15 MS. MCLELLAN: I think we discussed the
16 vehicle mockup. And I believe it says you managed
17 the compliance review of the vehicle and systems
18 components including full-sized vehicle mockup. So
19 what did that involve?

20 MR. WOOD: So we -- the mockup for
21 public viewing, we did some early work with Alstom
22 for the ability -- I think I mentioned that. One
23 of the concerns was that the floor -- the floor is
24 slightly undulating. The original premise was that
25 it would be a flat floor. The constraints of

1 having a low floor vehicle and the high speed meant
2 there were technical difficulties in producing
3 that. And there were concerns that the ability
4 impaired would be a disadvantage in terms of some
5 of the slopes. So we went through a fairly
6 rigorous process in trying to understand what that
7 was. I think we went to an AOC committee. We had
8 some accessibility groups who really gave us the
9 thumbs up in terms of available design and how that
10 evolved. So that was really just managing --
11 managing the interior and the expectations of all
12 the ridership, really.

13 MS. MCLELLAN: And then in terms of
14 being a liaison with and between OC Transpo and
15 RTM, what did that involve?

16 MR. WOOD: Yes, so I think I sort of
17 alluded that as part of the liaison process I was
18 looking at the residual risks that came out of the
19 hazard log. They would be primarily focussed on
20 procedure -- procedure and signed operating
21 procedures, SOPs, which would be either taken by
22 RTM as part of their maintenance regime or as the
23 operator, as OC Transpo's part of their standard
24 operating procedures, and really to get some
25 clarity as to where they would be, where they would

1 sit in terms of documentation and get agreement
2 from those two parties to make sure they'd been
3 done.

4 MS. MCLELLAN: And what did human
5 factors design -- let's start with --

6 MR. WOOD: Human factors was really how
7 the desk went together, how people interacted with
8 the overall system.

9 MS. MCLELLAN: And how did you find
10 that to be, generally?

11 MR. WOOD: Human factors was done
12 fairly early on the vehicle cab design. There was
13 quite a lot of discussion with OC Transpo over
14 that. I think there was sticking points on the
15 seats area. I'm not sure how that got resolved. I
16 left by -- in the middle of that somewhere. But in
17 terms of like safety and security, I was working
18 with the security lead in the office who was
19 managing the security on the side of that. There
20 was always some sort of crossover between safety
21 and security, some of the mitigations are dealt
22 with by both. So that's really where I fit in is
23 that liaison between those parties.

24 MS. MCLELLAN: And when an issue arose
25 or there was a change required and it was raised by

1 either party and you had to report that back and
2 forth, how was that process dealt with?

3 MR. WOOD: Change at what point in the
4 project? In the design phase?

5 MS. MCLELLAN: Yes.

6 MR. WOOD: Yeah, it depends on the
7 change itself. Normally it's done through a
8 variation process. Some of the changes were
9 basically interpretation changes and clarifications
10 from the PSOS. Nothing is perfect, so there was
11 some additional wording that goes into that so that
12 for testing then you've got the ability to have
13 that surety of what the wording would be. Some
14 would zero cost variations, some had money attached
15 to them and cost and scheduling.

16 MS. MCLELLAN: Can you think of any of
17 the changes that were implemented to the PSOS as a
18 result of this?

19 MR. WOOD: Yeah, I can think of one.
20 There was a big fire, I can't remember what the
21 panel was called, but there was a fire panel for
22 the tunnel. There was a lot of additional wording
23 that had to go in to describe its function. That
24 was probably the biggest changes that I'd seen.
25 I'm not sure if there was a cost variation

1 implication of that, I can't remember, but there
2 was certainly some wording changes within the PSOS.

3 MS. MCLELLAN: What were the wording
4 changes that -- what was required?

5 MR. WOOD: It was description of what
6 the thing did. I think there was no real
7 description originally, and there was additional
8 requirements from fire, police, in terms of CCTV.
9 That's closed circuit TV coverage and a screen
10 there.

11 MS. MCLELLAN: So we'll move on to your
12 role from 2017 to 2020, and where it's listed here
13 on your CV that you are the safety coordinator. So
14 what did that role just generally entail?

15 MR. WOOD: Yeah, as I was saying, the
16 safety coordinator I was just working between RTG.
17 There was the hazard log. The way that the hazard
18 log is closed is that your -- the residual risks of
19 maintenance and operations have to be covered
20 somehow through procedure. And the idea was really
21 to understand the design and accommodate it for the
22 majority of the risk. There's -- to go back to
23 where this comes from, there is a design precedence
24 of order in EN50126 which says you must design as
25 best you possibly can and then anything residual

1 then gets mocked up by procedures and people to
2 deal with that. So the agreement then would be
3 going through with RTM and OC Transpo and getting
4 agreement there that they're quite happy to
5 incorporate that as part of the standard operating
6 procedures.

7 MS. MCLELLAN: And how did your role
8 evolve post RSA?

9 MR. WOOD: I wasn't there post RSA.

10 MS. MCLELLAN: Doesn't it say here that
11 you were in this role to 2020?

12 MR. WOOD: Well, no, that's Finch West.

13 MS. MCLELLAN: Sorry.

14 MR. WOOD: I see it there.

15 MS. MCLELLAN: Okay.

16 MR. WOOD: 2017. The date is missing
17 on that.

18 MS. MCLELLAN: Okay. And in terms of
19 liaising with TUV and RTG to obtain the final
20 safety certification on the project, what did that
21 involve?

22 MR. WOOD: As you may be aware, TUV has
23 independent safety -- I'm trying to think of what
24 the acronym is on this project. The different
25 assessor provides an opinion that the system is

1 safe to operate. To get to that opinion, a number
2 of things have to be in place called the artifacts,
3 the safety artifacts. TUV was expecting a series
4 of documents to be produced by RTG, and TUV was
5 going through those documents, providing opinion.
6 It has a checklist of things it goes through at
7 which point it then goes to the independent
8 certifier and basically gives a thumbs up for
9 payment.

10 MS. MCLELLAN: Are you aware if all the
11 items on the checklist were certified or satisfied,
12 pardon me?

13 MR. WOOD: As far as I remember, they
14 were all signed off. There were obviously issues
15 with some findings, et cetera. There were
16 operational restrictions that came out of the
17 design, being no different than any other project.
18 I can't think of anything that really would have
19 stopped the final issuance of the safety
20 certificate. Those two would have actually raised
21 issues before allowing that.

22 MS. MCLELLAN: How were the items that
23 were deficient, how was that resolved?

24 MR. WOOD: I think it would have been
25 more information, further analysis by the

1 professionals of record, further data to support
2 that. That's generally how it went. If TUV
3 weren't happy, we'd have to go back and work with
4 RTG to try and generate more information.

5 MS. MCLELLAN: What was certified from
6 this process?

7 MR. WOOD: The entire project is
8 certified through the safety side, yeah.

9 MS. MCLELLAN: And in terms of the
10 certification, did this mean that all required
11 documentation existed in terms of safety for the
12 project?

13 MR. WOOD: There was a map of safety
14 documentation that there wasn't in the beginning.
15 There was a map created. It maybe two years
16 towards the end of the project, and RTG had
17 faithfully reproduced the documentation that it had
18 said it would do to satisfy TUV.

19 MS. MCLELLAN: How long did that take?
20 Was there a delay?

21 MR. WOOD: I wouldn't say there was a
22 delay. It was an onerous delivery. I think it was
23 about a year and a half to get that information
24 together.

25 MS. MCLELLAN: Is that typical for what

1 you've seen on other projects?

2 MR. WOOD: Normally a lot of the
3 documentation started earlier. And so there was a
4 bit of retrospective action in producing that
5 information.

6 MS. MCLELLAN: And what was the impact
7 of the information having to be produced
8 retrospectively?

9 MR. WOOD: Just more reassessment of
10 some of the designs.

11 MS. MCLELLAN: Did that lead to any
12 changes in the documentation, any differences than
13 what you'd usually see?

14 MR. WOOD: No doubt it would have been
15 similar to all documents. There would have been
16 changes to the documents for further elaboration to
17 attain some of the data to support the assumptions
18 in there.

19 MS. MCLELLAN: So I think you've done
20 this, but just if you could just walk us through
21 the process for obtaining the final safety
22 certification on the project from TUV to going to
23 the certifier?

24 MR. WOOD: As I said, there was a
25 number of artifacts, documents, safety documents

1 that were produced. There was a list. I provided
2 that list of documents or documents that came in to
3 the various parties, and that would have included
4 OC Transpo. Some of the other leads were then the
5 rail implementation office, and I would have
6 collated comments from them and provided those back
7 to RTG. RTG would have included those comments or
8 elaborated on those comments and provided those
9 documents at which point then RTG would have
10 supplied those documents to the safety assessor for
11 effectively, I think it was a statement of no
12 objection in terms of how -- it's not approval as
13 such. It's a statement of no objection.

14 MS. MCLELLAN: In terms of comments
15 from the rail implementation office and OC Transpo
16 that went to RTG, were those comments always
17 integrated?

18 MR. WOOD: Yes, that's right. They
19 were. And that was tracked through a matrix as
20 well.

21 MS. MCLELLAN: Did you have any
22 concerns with that process in terms of how the
23 safety certification and documentation turned out?

24 MR. WOOD: No, not really. I mean they
25 had a fairly reputable person or team at RTG

1 putting it together and respected safety assessor,
2 and the two interacted fairly well in terms of
3 understanding their needs, and RTG delivered that
4 information to them, and I think that was fairly
5 successful.

6 MS. MCLELLAN: So I just want to go
7 back in time that I wanted to deal with in terms of
8 your earlier role.

9 So subcontractor cost management and
10 budgeting; what did that involve?

11 MR. WOOD: Yeah, so every month I would
12 get figures from CTP for the different leads, and
13 again track that against budget and see if there
14 were any discrepancies in terms of charging for
15 time and expenses generally for the work and
16 activity that happened.

17 MS. MCLELLAN: And how were budget
18 constraints communicated?

19 MR. WOOD: Budget constraints for me
20 were just -- I had a target to meet, and I would
21 map that -- map the budget expenditure and then
22 challenge CTP where I thought they expended more
23 time than they should have done. That's where the
24 experience comes into it to say well, you know,
25 what you did was probably only a day's work. It's

1 not a week's work. It's that typical sort of
2 challenge.

3 MS. MCLELLAN: So how were those
4 constraints resolved in the end?

5 MR. WOOD: I think the constraints
6 would go back through the commercial office for the
7 rail implementation office. So some of those would
8 be discussed between CTP -- the heads of CTP.

9 MS. MCLELLAN: Okay. And then in terms
10 of project schedule assessment, what did that
11 involve.

12 MR. WOOD: There's an overall project
13 schedule, and I would track activities against
14 certain milestones to make sure they made sense and
15 they were just happening in the right order and
16 they're in the right time scale.

17 MS. MCLELLAN: Okay, and then what
18 happened when there were changes that needed to be
19 made to the project schedule or changes were
20 communicated to you in the project schedule?

21 MR. WOOD: Okay, so I would look at the
22 overall schedule and see if some of the milestones
23 were realistic, and I'd report back where I thought
24 they were slippages in terms of the overall
25 milestones and delivery.

1 MS. MCLELLAN: Generally how did you --
2 did you find the milestones were realistic?

3 MR. WOOD: Difficult to say. Certainly
4 the mile -- I would track a milestone, and I would
5 track it sort of its changeover time. So if there
6 were things that would happen a certain week, then
7 if there was a slippage I would be tracking the
8 slippages for the X number of weeks that that would
9 carry on for.

10 MS. MCLELLAN: Who did you report the
11 slippages to?

12 MR. WOOD: To Mr. Holder and I think
13 Mr. Craig as well.

14 MS. MCLELLAN: And do you recall what
15 some of the times where there were slippages?

16 MR. WOOD: Yeah, right around 2016.
17 Somewhere around there.

18 MS. MCLELLAN: And what was the
19 direction from the City in terms of availability
20 for slippages and time or for their time pressures
21 that you felt they faced?

22 MR. WOOD: It was reported. So I had a
23 very good rapport with the planning department and
24 the -- we regularly set up the schedule to monitor
25 certain aspects and that would have all gone

1 through the planning meetings that they had, so if
2 I raised any issues, that would have been escalated
3 upwards.

4 MS. MCLELLAN: And can you think of any
5 instances where that happened?

6 MR. WOOD: Yeah, I think post the
7 operating maintenance storage facility payments I
8 was particularly interested in the system
9 development and how that was impacted. And so I
10 set up a number of areas in the planning reporting
11 to keep track of certain aspects of subsystems as
12 they -- as they were produced.

13 MS. MCLELLAN: I have a few general
14 questions, so I'll ask Ms. McGrann if she has any
15 follow-up questions.

16 MS. MCGRANN: Just a couple. With
17 respect to the operating maintenance storage
18 facility, are you speaking about Belfast yard?

19 MR. WOOD: Yes.

20 MS. MCGRANN: I think it's also
21 referred to as the maintenance and storage
22 facility, which is what you said. Were you looking
23 at the automation of that yard at all?

24 MR. WOOD: Obviously, ultimately, yes
25 because of CBTC system was supposed to provide the

1 full automation for that. That hadn't materialized
2 even at the very early stage.

3 MS. MCGRANN: When you say that hadn't
4 materialized at an early stage, was it behind the
5 anticipated schedule, the schedule that had been
6 provided to you?

7 MR. WOOD: I'd never -- I think I
8 raised early issues that didn't seem to be on the
9 radar at all for the automation of the yard. One
10 of the things I was concerned about on the OSF was
11 the systems components and that not materializing
12 in that time, but I wouldn't have expected
13 automation to go until very, very late in the
14 project anyway because it's mainly quite a manually
15 intensive area at the very end of the project and
16 then it's cut over into automation, and that's
17 beyond the time I was there anyway.

18 MS. MCGRANN: With respect to the
19 scheduling work that you were doing, I take it that
20 you were reviewing information that ITG provided to
21 help your scheduled tracking; is that right?

22 MR. WOOD: That's right, yeah. I'd use
23 their project schedule to their milestones and then
24 I work from that and create my own sheets or work
25 with Michael Craig who would generate more

1 milestones for me and keep that tracked through the
2 P3 planning software.

3 MS. MCGRANN: At any point during your
4 work on the scheduling, did your scheduling work
5 begin to or stop matching up with the schedule that
6 RTG was providing?

7 MR. WOOD: Yeah, but that's fairly
8 common for a project like this. It ebbs and flows
9 in terms of what's delivered. There's a lot of
10 focus and, of course, then things like the tunnel
11 collapse and things put a real wrench in the works
12 in terms of overall planning.

13 MS. MCGRANN: When you refer to the
14 tunnel collapsing, are you talking about the Rideau
15 Street sinkhole that took place in June of 2016?

16 MR. WOOD: Yes.

17 MS. MCGRANN: You say that it's normal
18 for the work that you were doing on the scheduling
19 to disagree with the schedule that's being provided
20 by the contractor; is that right?

21 MR. WOOD: Yes, that's pretty common,
22 yeah.

23 MS. MCGRANN: At any point during the
24 work that you were doing, did the mismatches
25 between your scheduling work and the schedule being

1 provided by RTG become abnormal in your experience
2 or an area of concern?

3 MR. WOOD: Yes, I think I -- any
4 schedule is a concern. But it doesn't mean that
5 RTG are not managing the risk within themselves, so
6 that's not immediately visible. All we can do is
7 really report on the slippage and say this is three
8 months slippage, and that's quite a lot of time to
9 make up. All you can do is make that visible to
10 the City.

11 MS. MCGRANN: I take it you did make
12 that visible to the City?

13 MR. WOOD: That's right, I did.

14 MS. MCGRANN: Did you do any work with
15 a group of external consultants who were brought in
16 and had been referred to as the independent
17 assessment team?

18 MR. WOOD: By that do you meant SEMP?

19 MS. MCGRANN: I don't mean SEMP but we
20 will have some questions about SEMP, I think. I
21 believe that these individuals were from, hopefully
22 I get this right, STV brought in to help assess the
23 schedule that was being provided by RTG, for
24 example.

25 MR. WOOD: Yeah, I think I provided

1 some metrics on some of the artifacts that I was
2 providing into whatever they were doing and
3 provided some updates, but apart from that, no, I
4 didn't have much interaction with those.

5 MS. MCGRANN: With respect to SEMP, I
6 think that that was a company that was brought in
7 by RTG; is that right?

8 MR. WOOD: That's correct, yes.

9 MS. MCGRANN: I think they were brought
10 in to do an overall systems engineering health
11 check; have I got that right?

12 MR. WOOD: That's correct, yeah.

13 MS. MCGRANN: Can you explain what
14 would be involved in that health check?

15 MR. WOOD: Yes, SEMP obviously are
16 quite experienced on the systems engineering
17 approach -- systems assurance processes. There's a
18 set formula which works in terms of what needs to
19 be done and when. Their health check would be
20 looking at when those things were done and what was
21 produced. From that, they would take a view as to
22 what the effectiveness of that -- the overall
23 processes were and where the gaps would be in which
24 RTG had to plug.

25 MS. MCGRANN: Did you have any

1 involvement or any interaction with SEMP in the
2 work that they did?

3 MR. WOOD: Not entirely in the work,
4 but certainly in the reporting and interaction with
5 RTG. There was lot of reporting there. Some
6 attendances what they called, day in the life of
7 analysis. It's a process in which they go through
8 an overall valuation of design through -- just
9 walking people through what would happen in the
10 day, and that was recorded, and that's part of the
11 input into the safety assessment.

12 MS. MCGRANN: So you're there or you're
13 interacting with them in your role -- in your
14 safety role?

15 MR. WOOD: Yeah, that's right. So they
16 gave me a list of documentation that they would
17 produce. I would track that against the time
18 schedules and just request updates of that on a
19 biweekly basis and some regular checks, check-ins
20 with a lead of that, and an overall assessment of
21 where we are. So we'd make sure that we get the
22 right documentation to -- for assessment.

23 MS. MCGRANN: Can I circle back to your
24 comment about the maintenance and storage facility
25 for a second.

1 MR. WOOD: Yeah.

2 MS. MCGRANN: What in particular were
3 you looking at in terms of the maintenance and
4 storage facility?

5 MR. WOOD: When was I looking at that?
6 At the very -- I was around at the time of its --
7 the first payment of the OMSF.

8 MS. MCGRANN: What was the nature of
9 your inquiry into that particular milestone?

10 MR. WOOD: Nothing. At that time I was
11 interested in how, as you're aware, that the part
12 of the control centres is in the OMSF and some of
13 the systems equipment rooms were in there, so I was
14 interested to see what was going in at the time,
15 what would be available at the time of payment.

16 MS. MCGRANN: Any mismatches that you
17 saw between what you expected would be available at
18 the time of that milestone payment and what was
19 actually available?

20 MR. WOOD: I think there were empty
21 equipment cabinets and there were cables, et
22 cetera. The equipment wasn't there at the time.
23 That is not uncommon either. It depends on where
24 it's stored, et cetera, and it could be just a
25 phasing of where -- or what needs to be done by the

1 subcontractors.

2 MS. MCGRANN: Any particular concerns
3 raised on your part by the state or the status of
4 the MSF at the time of the milestone payment?

5 MR. WOOD: Not really. I think there
6 was a need to get the OMSF into a position where
7 Alstom could move in, and I think there was a bit
8 of pressure in terms of having that available for
9 them to conduct their work in.

10 MS. MCGRANN: How did that pressure
11 translate into steps taken on the ground at the
12 MSF, do you think?

13 MR. WOOD: I don't know -- how do you
14 mean by that?

15 MS. MCGRANN: I'm trying to understand
16 -- so you're looking at the state of the MSF
17 through the lens of whether a milestone payment
18 should be or will be made; is that right?

19 MR. WOOD: I'm not involved in the
20 milestone payments as such but, however, I'm
21 interested in the status of the MSF and what was in
22 there at the time. So I would be expecting some
23 more equipment in there. It could be the fact that
24 it wasn't delivered or it wasn't in a status of
25 being designed yet, so really all I'm interested in

1 is where we were expected to be and where they
2 currently were at the time.

3 MS. MCGRANN: So you're looking at this
4 strictly from a where is the schedule and where
5 is --

6 MR. WOOD: Exactly. Yeah.

7 MS. MCGRANN: And did the OMSF slip off
8 the project schedule at any point in time while you
9 were looking at the scheduling?

10 MR. WOOD: No, I don't think so. It
11 was delivered on time. I think -- yeah, I don't
12 think there's anything untoward. It had to be
13 there because of the needs for Alstrom to
14 manufacture the vehicles.

15 MS. MCGRANN: Can we take a brief
16 break.

17 (ADJOURNMENT)

18 MS. MCLELLAN: So Mr. Wood, are you
19 familiar with the safety auditor who was overseeing
20 stage 1?

21 MR. WOOD: The safety auditor, I am
22 familiar with it, yes, with two.

23 MS. MCLELLAN: Did you work with the
24 safety auditor at all?

25 MR. WOOD: Yes, I did, yes.

1 MS. MCLELLAN: And what did your work
2 entail?

3 MR. WOOD: My work was liaising with a
4 gentleman named Sergio Manaliti (phonetic) and I
5 was basically being the City's voice for
6 interaction between RTG and to provide the data to
7 support the OC Transpo aspect for 42.

8 MS. MCLELLAN: And what can you recall
9 were -- or what were some of the issues or main
10 focuses that came out of your involvement with
11 dealing with the safety auditor?

12 MR. WOOD: Nothing that really comes to
13 mind. Obviously, the biggest challenge first of
14 all was doing a lot of -- getting a lot of data
15 together. A lot of the design information packaged
16 up to support the safety auditor at the very end.
17 I use the word safety assessor. That was the
18 safety auditor. I've forgotten there's different
19 terminology in different contracts.

20 MS. MCLELLAN: And then did this
21 involve the completion or the circumstances around
22 the safety audit plan?

23 MR. WOOD: No, the safety audit plan is
24 generated by the then safety auditor. That's their
25 process in which they conduct themselves.

1 MS. MCLELLAN: And how were you
2 involved in the completion of the safety audit
3 plan?

4 MR. WOOD: I had no involvement with
5 the safety audit plan apart from just, obviously
6 monitoring the ISO was following that.

7 MS. MCLELLAN: And then in terms of the
8 process, so was the process that you received
9 feedback from TUV, I think you're saying T-U-V, and
10 you received feedback from TUV and that went to OC
11 Transpo, or how did that work?

12 MR. WOOD: Yeah, generally there was a
13 request that come out of TUV. Because of the
14 independent nature, you don't get too involved with
15 them. They are a law unto themselves as much as
16 they can be. But there are requests for the gaps
17 for, for instance, if a hazard had to be mitigated
18 by standard operating proceeding, I would go and
19 ask OC Transpo to either create it or provide that
20 evidence to support the mitigation.

21 MS. MCLELLAN: And can you think of
22 some examples where that happened?

23 MR. WOOD: Probably -- I think probably
24 training evacuation would be one of them.

25 MS. MCLELLAN: Can you expand on that?

1 MR. WOOD: Well, in terms of getting
2 passengers safely off the vehicle into a safe place
3 of refuge.

4 MS. MCLELLAN: So how was that issue
5 dealt with?

6 MR. WOOD: It would be written up as a
7 standard operating procedure possibly in the OC
8 Transpo operating manual or as a subset of that.
9 And that would also include things like possible
10 training. I wasn't involved in any of those
11 training exercises, but probably the
12 recommendation, something like that, would be you
13 would exercise a proper evacuation of the vehicle
14 with the passengers.

15 MS. MCLELLAN: And were there any other
16 specific areas of evaluation that required a need
17 for a change in operating procedures out of TUV's
18 assessment and the safety auditor's assessment?

19 MR. WOOD: There are always tweaks of
20 things and clarity that there was need to provide.
21 That's pretty standard on all these type of things.
22 There would be further elaboration by OC Transpo or
23 there may be some weak words which had to be
24 described better in terms of who the liaison
25 between RTM, because obviously the RTM and OC

1 Transpo would have to work together in maybe an
2 incident involved like fire services or emergency
3 services, so that sort of detail would go in.

4 MS. MCLELLAN: I don't know if
5 Ms. McGrann has any follow-up questions on that.

6 MS. MCGRANN: No questions.

7 MS. MCLELLAN: Were you involved in the
8 development of the engineering safety assurance
9 case?

10 MR. WOOD: No, the ESAC is generated by
11 SEMP for RTG.

12 MS. MCLELLAN: So you didn't have any
13 involvement?

14 MR. WOOD: Yeah, I did have
15 involvement. I was sort of shepherding those
16 documentation to the ISA.

17 MS. MCLELLAN: So what did that involve
18 in terms of shepherding documents?

19 MR. WOOD: Just passing that to the
20 various people that required, the stakeholders. So
21 that would be the duty holder would be which OC
22 Transpo and RTM.

23 MS. MCLELLAN: I understand there were
24 Confederation line safety meetings. Did you attend
25 those?

1 MR. WOOD: Yeah, I did, but primarily
2 with the ISA.

3 MS. MCLELLAN: And the ISA is?

4 MR. WOOD: The independent safety
5 auditor.

6 MS. MCLELLAN: So I know that they
7 happened monthly. Do you recall sort of the main
8 areas of focus out of those meetings?

9 MR. WOOD: They would have been looking
10 at all the various documents and the status of
11 that. So reporting on that. I think there were
12 biweekly ones towards the end because there was
13 such a volume and pressure to get this stuff
14 wrapped up for the ISA, so there was a need to keep
15 the ISA fed with that information.

16 MS. MCLELLAN: By the end, what time
17 frame do you need?

18 MR. WOOD: Before RSA.

19 MS. MCLELLAN: So summer 2019?

20 MR. WOOD: I couldn't quote the date
21 for the moment. I think it was a bit later than
22 that. I can't remember the certifications.

23 MS. MCLELLAN: That's okay. So at
24 these biweekly meetings, you would be looking at
25 documentation leading up to RSA, and what was the

1 process in terms of feedback from these meetings?

2 MR. WOOD: So the meeting minutes were
3 recorded by SEMP directly. And there would be
4 certain specific actions for things to be done by
5 both RTC, OTM, or OC Transpo.

6 MS. MCLELLAN: Do you recall of any
7 instances where certain actions -- there was an
8 issue with certain actions that were proposed or
9 certain actions weren't implemented?

10 MR. WOOD: No because we were going
11 through systematically to try and get closure of
12 the mitigations. There may have been some things
13 open towards the end, and that may have fed into
14 the operational restrictions document, and there
15 may have been things that had to be temporary
16 measures because certain aspects of the designs had
17 not been fully evaluated or fully functioning.

18 MS. MCLELLAN: Did that concern you
19 that certain aspects of the design hadn't been
20 fully formulated so close to RSA or leading up to
21 the RSA?

22 MR. WOOD: It depends on the nature of
23 the severity of that. If it's really safety
24 critical then obviously then that becomes a big
25 issue, but if they're minor things that are worked

1 around, that's acceptable. You know, the duty
2 holder is accepting to that process as well.

3 MS. MCLELLAN: Can you think of any
4 safety critical examples that came up?

5 MR. WOOD: Yeah, I think I can remember
6 one of them which was the end gates on the
7 platform. I think the risk of CCTV cameras, I
8 think that was one of the issues that manifested
9 itself very later on.

10 MS. MCLELLAN: Can you expand a bit on
11 what happened there?

12 MR. WOOD: Yeah, didn't they put a work
13 around for some people blowing whistles or
14 something for the train to leave the station?

15 MS. MCLELLAN: So in terms of -- why
16 don't you just provide your recollection of what
17 happened.

18 MR. WOOD: Well, I'm -- I don't recall
19 that. All I remember is what I read in the hazard
20 log in terms of the work around.

21 MS. MCLELLAN: And what was done to
22 resolve this safety critical event?

23 MR. WOOD: I'm not sure. I wasn't
24 around when -- there would have been outstanding
25 action I suspect after RSA.

1 MS. MCLELLAN: But you're not aware of
2 what was done?

3 MR. WOOD: I'm not aware, no.

4 MS. MCLELLAN: Ms. McGrann, do you have
5 any questions on that point?

6 MS. MCGRANN: I do not, thank you.

7 MS. MCLELLAN: So just turning --
8 actually, first of all did you have any involvement
9 in stage 2?

10 MR. WOOD: No, apart from bidding for
11 it.

12 MS. MCLELLAN: And in terms of -- so
13 just walking back to pre-procurement, you supported
14 the City in the development of its procurement
15 strategy?

16 MR. WOOD: Yeah.

17 MS. MCLELLAN: Did you take over in
18 your role for anyone?

19 MR. WOOD: Sorry, did I take over my
20 role?

21 MS. MCLELLAN: Yes, I think we
22 discussed this. In 2011 you took over from
23 Mr. Jones?

24 MR. WOOD: Mr. Jones. That's right,
25 yes.

1 MS. MCLELLAN: And then I think we
2 discussed who you reported to. So what had been
3 decided about the project and the procurement model
4 when you began your work?

5 MR. WOOD: I think the only decision
6 was there was a DBFM. I think that was a decision
7 not in my court to make. That was taken -- yeah, I
8 don't know where that was made.

9 MS. MCLELLAN: Were you ever provided
10 with any reason for why that model was chosen?

11 MR. WOOD: No, none at all.

12 MS. MCLELLAN: Did the DBFM model have
13 any practical implication or impact on safety
14 requirements?

15 MR. WOOD: No, not -- well, I wasn't
16 managing safety anyway. The safety lead was
17 dealing with that, but anything with DBFM means
18 that the operational component is separated from
19 the project, which means it needs a little bit more
20 scrutiny in terms of how that's managed and how
21 that comes into the project.

22 MS. MCLELLAN: Okay. And so were you
23 involved with the approach to the procurement of
24 rolling stock?

25 MR. WOOD: The approach to the

1 procurement of rolling stock in terms of how do you
2 mean?

3 MS. MCLELLAN: The selection of the
4 successful proponent and the rolling stock that was
5 chosen.

6 MR. WOOD: That was RTG to make that
7 decision. That was in their court.

8 MS. MCLELLAN: And in terms of the
9 City's key requirements, I think we've covered
10 this, but just generally you were involved in
11 developing the safety requirements and the
12 standards?

13 MR. WOOD: I was involved in the safety
14 requirements and standards?

15 MS. MCLELLAN: In developing them.

16 MR. WOOD: No. All I was really
17 providing is best practice for the railway systems
18 which had been typically used before with some
19 success.

20 MS. MCLELLAN: So the focus of the best
21 practices, what was that?

22 MR. WOOD: Well, really using system
23 engineering techniques.

24 MS. MCLELLAN: Were there any gaps or
25 different requirements that you saw in your work on

1 stage 1 from other similar projects?

2 MR. WOOD: No, I couldn't say there was
3 any gaps in there at all. I think it was fairly
4 comprehensive in what it was dealing with. Some of
5 that was -- in terms of the overall schedule for --
6 Schedule 20 for the pain share gain share
7 techniques for actually stimulating performance. I
8 think that was relatively well done.

9 MS. MCLELLAN: Were you involved in the
10 development of a safety management system?

11 MR. WOOD: No.

12 MS. MCLELLAN: And then I think you
13 answered this before but the PSOS requirements for
14 the project, generally were they more or less
15 prescriptive than similar projects that you've
16 worked on?

17 MR. WOOD: They were a little bit more
18 prescriptive, and I think that was a result of the
19 change of models earlier on. I don't think that --
20 that was none. And as I said, there was some time
21 spent in trying to make them as open as possible.

22 MS. MCLELLAN: And how would the change
23 in models lead to a more prescriptive PSOS
24 requirements?

25 MR. WOOD: No, I think the original

1 design build would have been more prescriptive
2 because you're affecting design specification.
3 Here you're trying to achieve a performance
4 specification, which is very different.

5 MS. MCLELLAN: In terms of speed
6 requirements, were you involved with speed
7 requirements on the project?

8 MR. WOOD: The speed -- in the vehicle
9 speed you mean?

10 MS. MCLELLAN: Yes.

11 MR. WOOD: The speed requirement comes
12 from the overall performance, the end to end
13 performance in the carriage of people. So it
14 depends on the track layer, the vehicle itself. So
15 I don't think there was any boundaries specified on
16 this. Obviously, getting people from A to B as
17 quickly as possible is a goal for anybody and as
18 safely as possible.

19 MS. MCLELLAN: Do you remember in terms
20 of the speed requirements assessing against a
21 chosen route to determine if the requirements were
22 feasible or appropriate?

23 MR. WOOD: No, I think that was a model
24 somewhere else. There were a number of different
25 routes and alignments chosen, and I think there was

1 probably a bit of latitude there in terms of what
2 the performance specification would achieve.

3 MS. MCLELLAN: Was there any
4 intermingling of safety requirements with speed
5 requirements?

6 MR. WOOD: Speed and safety are pretty
7 much close bedfellows, I would say, but moreover,
8 stopping the vehicle is a more important one, so
9 yeah, speed, deceleration, acceleration are all
10 related to safety.

11 MS. MCLELLAN: I think we discussed the
12 signalling system and the consideration of
13 interface risk with the signalling system being
14 from a different source than the vehicle provider.

15 MR. WOOD: M-hm.

16 MS. MCLELLAN: Were there any changes
17 to the PSOS for rolling stock after the RFP was
18 released?

19 MR. WOOD: I can't remember off the top
20 of my head. I think there may have been some
21 elaboration of some requirements from the RFIO
22 process, if I remember correctly, but I don't think
23 the PSOS would have been changed because it would
24 have been too risky at that time.

25 MS. MCLELLAN: Do you remember which

1 areas there was -- what were the areas of the
2 elaboration?

3 MR. WOOD: I think it may have been
4 ridership and things like that there was a
5 clarification of that.

6 MS. MCLELLAN: Can you speak further to
7 that or provide further detail?

8 MR. WOOD: Yeah. As you well may be
9 aware, the system has to accommodate the ridership
10 capacity for the BRT and beyond. It has to double
11 ridership effectively, and there may have been some
12 questions about certain areas for ridership that
13 had to be further expanded upon.

14 MS. MCLELLAN: Do you remember what
15 those certain areas were?

16 MR. WOOD: Yeah, may have been
17 Pendersey because I think Pendersey was a big sink
18 of ridership and a potential growth area for the
19 City as well.

20 MS. MCLELLAN: And then were there any
21 changes to reporting structure during the
22 procurement phase with respect to your role?

23 MR. WOOD: During the procurement
24 phase? Apart from Mr. Jones departing, I'm not
25 sure if there was a restructuring at that time.

1 There was some later in 2016, but no, I can't
2 remember John -- Mr. Jensen had left. Mr. Craig
3 had taken temporarily that position, I think, in
4 that case, and then we received a new director
5 afterwards. I can't remember exact dates and when
6 people were shuffled around.

7 MS. MCLELLAN: And I think you spoke to
8 a restructuring in 2016?

9 MR. WOOD: Yes, that's right. That's
10 when Richard Holder took over Gary Craig's direct
11 report to -- in terms of systems and vehicles, et
12 cetera.

13 MS. MCLELLAN: And was there any change
14 -- was there any, like, change in the way that
15 reporting or just the general structure functioned
16 with the transition from Gary Craig to Richard
17 Holder?

18 MR. WOOD: Yeah, there was a number of
19 layers added into the organization, for whatever
20 reason, I don't know. And a number of different
21 segregation, different disciplines.

22 MS. MCLELLAN: And are you aware of why
23 those changes were implemented?

24 MR. WOOD: No idea at all.

25 MS. MCLELLAN: In the post procurement

1 stage in construction and manufacturing, how did
2 your role change or how were you involved?

3 MR. WOOD: In the post procurement?
4 Well, more or less as the interactional systems and
5 vehicle side with RTG.

6 MS. MCLELLAN: So how did your role
7 change then?

8 MR. WOOD: It didn't really change at
9 all.

10 MS. MCLELLAN: You were just having to
11 interact with RTG, I guess, would be the change?

12 MR. WOOD: Exactly. I had a
13 counterpart at RTG, and we worked closely together.
14 The aspect of the PPP as a partnership is try to
15 keep that partnership rolling as much as possible
16 as you can with the commercial constraints.

17 MS. MCLELLAN: Who did you
18 predominantly deal with at RTG?

19 MR. WOOD: I dealt predominantly with
20 Mr. Jacques Bergeron. And yeah, I think that's
21 probably my main point of contact.

22 MS. MCLELLAN: And you mentioned that
23 you were in your role trying to keep the
24 partnership going; what do you mean by that?

25 MR. WOOD: One of the aspects of a PPP

1 is that there's always a conflict between sort of a
2 client subcontractor relationship and delineating
3 between that and a partnership in terms of helping
4 both partners come to a conclusion -- satisfactory
5 conclusion. It's a little bit different mindset,
6 and it's important that, you know, the project's
7 conducted that way.

8 MS. MCLELLAN: Did you see any of those
9 potential conflicts in your work that can rise from
10 that type of situation?

11 MR. WOOD: There's always conflict in
12 terms of different opinions in terms of
13 interpretation. That has to be balanced with in
14 terms of the law, in terms of engineering law, in
15 terms of how that's interpreted.

16 MS. MCLELLAN: Were you ever involved
17 in managing or resolving any of those conflicts?

18 MR. WOOD: More technical
19 disagreements, perhaps, interpretation. There's
20 quite a lot of those things, but generally, yes.

21 MS. MCLELLAN: And what were some
22 examples of those technical disagreements?

23 MR. WOOD: I think one -- I remember
24 one of them being the vehicle in terms of the --
25 there's a thing called Schedule 13, which is the

1 extracts for the vehicle, and there was an offer by
2 Alstom to provide a high efficient motor for the
3 vehicle and Alstom came back with a different
4 version of the motor, which is slightly less
5 efficient, but that's the advantage and
6 disadvantage. So there's an interpretation issue
7 in terms of how Schedule 13 was interpreted and
8 what was finally offered.

9 MS. MCLELLAN: So how was that resolved
10 in terms of Alstom coming up with this less
11 efficient motor?

12 MR. WOOD: Well, Alstom eventually went
13 for the less efficient motor. That has some
14 implications. There may be some ease of
15 manufacture and also ease of obtainment of the
16 motor itself, so there may be a tradeoff between a
17 more efficient motor that has difficult parts to
18 get ahold of versus something which is off the
19 shelf, and that may be the balance there.

20 MS. MCLELLAN: And how was that
21 particular disagreement handled between RTG and the
22 City?

23 MR. WOOD: The disagreement was through
24 discussion at some of the technical groups. In
25 terms of the interpretation, I think schedule -- I

1 think something happened in schedule by in terms of
2 how it's rewritten. I think there was a conflict
3 between Schedule 15(2) part 4 and Schedule 13.
4 Obviously Schedule 13 is the precedence, and I
5 think commercial decision was made to take the
6 15(2) part 4 version.

7 MS. MCLELLAN: And would there be any
8 safety or reliability impacts with the less
9 efficient motor?

10 MR. WOOD: No, not at all. More power
11 consumption but marginal. The trade off, as I
12 said, would be the availability of spare
13 components, perhaps.

14 MS. MCLELLAN: Do you know why Alstom
15 chose to go this route in terms of the motor they
16 chose?

17 MR. WOOD: No, it could be
18 manufacturing, and the more efficient motor uses a
19 rare magnet and may be very difficult to get ahold
20 of, and it may have been a good choice at this
21 time.

22 MS. MCLELLAN: Ms. McGrann, I don't
23 know if you have any questions?

24 MS. MCGRANN: I do not.

25 MS. MCLELLAN: In terms of post RSA,

1 did anybody take over your role?

2 MR. WOOD: I don't know. I don't know
3 who was there after me.

4 MS. MCLELLAN: Okay. And then in terms
5 of the project budget, what were you told about the
6 budget when you began your work?

7 MR. WOOD: I was given some numbers in
8 terms of what was allocated for those disciplines,
9 and I tried to manage the time expenditure within
10 that as best I could.

11 MS. MCLELLAN: And how was
12 subcontractor budget management handled or factored
13 in?

14 MR. WOOD: CTP traditionally brought
15 the monthly total of hours, et cetera, against the
16 disciplines and then provided that, and I would
17 just total that up and provide that to the City.

18 MS. MCLELLAN: I think you spoke to
19 this before, but if the hours were excessive, how
20 was that resolved? Did you often have to write
21 hours down or speak with CTP about writing hours
22 down?

23 MR. WOOD: Yeah. As I said, I would
24 challenge the management, the manager of that
25 saying in question why was X number of hours

1 expended at this point when I was thinking like two
2 hours would have been sufficient and there was more
3 expended. There may be good reason for it but that
4 would be the sort of interaction I would have.

5 MS. MCLELLAN: And did that have any
6 impact on the City in your relationship with CTP?

7 MR. WOOD: No, CTP were very
8 professional guys. They would go back and analyse
9 that, and they would come back with a report based
10 on, you know, in terms of what they expended
11 whether it was genuine or mistake.

12 MS. MCLELLAN: And just generally,
13 let's start with the budget overall. Did you feel
14 that the budget for the project was realistic?

15 MR. WOOD: I never really had a lot of
16 involvement with the overall budget of the project.
17 Yeah, it's difficult to say. The budget, you know,
18 you're building a tunnel. So it's very similar to
19 Edmonton, so very costly initially for building a
20 system like this. I can't give you any real
21 evaluation of that because I wasn't involved in the
22 major, but apart from some input into some of the
23 subsystems maybe on the budget which is like a
24 small amount.

25 MS. MCLELLAN: And you did handle the

1 subcontractor budget management though?

2 MR. WOOD: Yeah, there was system
3 targets to try and keep to, yeah.

4 MS. MCLELLAN: And were those
5 realistic, in your opinion?

6 MR. WOOD: Yeah, in terms of it was
7 based on an hourly rate, so they seemed fairly
8 reasonable about an average for that type of
9 discipline.

10 MS. MCLELLAN: And in the time that you
11 were working on the project, was there any work
12 that was done to evaluate whether the budget was
13 adequate?

14 MR. WOOD: I don't know. I wasn't
15 involved in that part of the financial aspect.

16 MS. MCLELLAN: And were you aware of
17 any work that was done to prepare for a need for
18 the budget to be flexible or flexibility to be
19 worked in?

20 MR. WOOD: No. Once again, no real
21 input into that.

22 MS. MCLELLAN: And were you involved at
23 all in value engineering?

24 MR. WOOD: No.

25 MS. MCLELLAN: So in terms of geo

1 technical risk, were you involved at all in the
2 assessment of geo technical risk?

3 MR. WOOD: It's not my discipline. No,
4 it's the geo phys guys.

5 MS. MCLELLAN: And milestone payments,
6 I think you spoke to this, but were you involved in
7 determining the milestones and what they would be,
8 how much would be paid upon completion of each
9 milestone?

10 MR. WOOD: No.

11 MS. MCLELLAN: Were you involved in
12 assessing whether any changes should be made to the
13 milestone payments once construction was underway?

14 MR. WOOD: No.

15 MS. MCLELLAN: And the role of
16 Infrastructure Ontario, so was IO or Infrastructure
17 Ontario working on the project when you started, or
18 did they join after?

19 MR. WOOD: I think they were pretty
20 close in when I did because a decision to move from
21 design build to the AFP came pretty close to when I
22 joined. So I remember meeting Allan and Bruce
23 fairly early on.

24 MS. MCLELLAN: And what was their role?

25 MR. WOOD: They were just -- they were

1 just basically -- I didn't have a lot of
2 interaction apart from some of the more technical
3 aspects of the PSOS in terms of what there was.
4 And in terms of molding it into a railway specific
5 specification.

6 MS. MCLELLAN: So you did work a bit
7 with Infrastructure Ontario?

8 MR. WOOD: Yes, I did a bit and Kitty
9 Chan as well. I think Allan left and Kitty came on
10 board.

11 MS. MCLELLAN: So what were your
12 primary interactions with Infrastructure Ontario?

13 MR. WOOD: Nothing much apart from
14 providing some early descriptive data that would go
15 into the PSOS.

16 MS. MCLELLAN: And how did their
17 involvement impact the project?

18 MR. WOOD: They were steering the
19 project. I didn't have a lot of interaction with
20 them. I think they were more at the project
21 agreement level and their lawyers, et cetera,
22 steering that aspect of it, and we were left to the
23 technical aspects.

24 MS. MCLELLAN: Then I think you did
25 speak to your involvement in implementation a bit,

1 but are you able to speak to the City's approach to
2 monitoring progress in compliance with the project
3 agreement through the implementation phase?

4 MR. WOOD: Through the implementation
5 phase, as in you mean the construction phase or the
6 integration phase?

7 MS. MCLELLAN: Well, specifically yeah,
8 the construction phase, testing commissioning, were
9 you involved in either of those?

10 MR. WOOD: I was not involved in
11 testing commissioning or the construction phase.

12 MS. MCLELLAN: You weren't involved at
13 all with design reviews in the construction phase?

14 MR. WOOD: No, there was no design
15 reviews in the construction phase. The design
16 phase finished and goes into construction stage
17 ideally.

18 MS. MCLELLAN: In your opinion, did the
19 City have the resources and expertise to evaluate
20 compliance with the project agreement In
21 implementation phase?

22 MR. WOOD: In the implementation phase
23 or the design phase?

24 MS. MCLELLAN: In the implementation
25 phase.

1 MR. WOOD: I wouldn't know on the
2 implementation. I don't know what you mean by
3 implementation phase. Do you mean on construction
4 and testing integration?

5 MS. MCLELLAN: Yes.

6 MR. WOOD: As I said, I wasn't part of
7 the testing integration phase so I couldn't tell
8 you how many people were employed on that and
9 whether they had the requisite experience.

10 MS. MCLELLAN: I believe we spoke to
11 the independent assessment team that was hired in
12 2017. But just to be clear, did you interact with
13 the independent assessment team?

14 MR. WOOD: I don't believe -- I can't
15 think of any reason -- referred to me as that, so I
16 think I provided metrics to Richard on the safety
17 -- because that would be my role at that time on
18 the safety liaison documentation. I think that was
19 about all I did in terms of reporting. And I think
20 they aggregated that data and provided an overall
21 assessment to committee.

22 MS. MCLELLAN: And what did you
23 understand the role of the independent assessment
24 team to be at the time?

25 MR. WOOD: I don't know. As I said, I

1 didn't interact with them very much. I presume
2 they were high level reporting GT in terms of
3 understanding what was happening on the project. I
4 don't know who the individuals are or how qualified
5 they would be for that.

6 MS. MCLELLAN: Are you aware of any
7 preparations that were done -- any preparation that
8 was done for operation and maintenance post revenue
9 service?

10 MR. WOOD: Not post revenue service.
11 All I can say is that although the standards and
12 procedures were identified, they were obviously
13 written because the independent safety auditor
14 would have looked at those as credible evidence.
15 Now, whether they were implemented and they were --
16 people were trained on them, I don't know.

17 MS. MCLELLAN: And in terms of trial
18 running and handover, you were not involved in
19 that?

20 MR. WOOD: I was not involved in that,
21 no.

22 MS. MCLELLAN: Were you aware of the
23 proposal of a soft start?

24 MR. WOOD: Soft start, I don't know
25 what that means.

1 MS. MCLELLAN: A soft start sort of
2 before, you know, running full service, a sort of
3 test period.

4 MR. WOOD: Okay. I think I know what
5 you mean. It's the maturity for liability. I
6 wasn't made aware of that. I don't think I would
7 have been made aware of that because of what I was
8 doing with TUV. It would seem a reasonable
9 approach.

10 MS. MCLELLAN: It would seem a
11 reasonable approach?

12 MR. WOOD: As a soft start, possibly,
13 yes.

14 MS. MCLELLAN: But you weren't aware at
15 the time that that was being proposed?

16 MR. WOOD: I don't believe I had any
17 impact on what I was doing at the time. It would
18 just be a gentle burn in of the system.

19 MS. MCLELLAN: In terms of other light
20 rail projects that you've worked on, have there
21 been soft starts in the past that you've
22 experienced working on?

23 MR. WOOD: There's always -- yeah, a
24 lot of the projects have a reliability growth
25 phase. The reliability guys talk about bathtub

1 curve, and the secret is really to get that curve
2 initial slope to be as quick as possible but that
3 depends on, you know, the types of equipment, et
4 cetera, and how that's monitored in the growth
5 phase.

6 MS. MCLELLAN: Before I ask my final
7 two questions, Ms. McGrann, do you have any
8 questions?

9 MS. MCGRANN: Just one or two. I will
10 be hopping around in the chronology, so I'll do my
11 best to flag where I'm referring to. But with
12 respect to the procurement phase, I understand that
13 there was a prequalification of the vehicle
14 providers that each of the proponents was
15 proposing; are you familiar with what I'm talking
16 about?

17 MR. WOOD: Yes, I am. Yes.

18 MS. MCGRANN: Are you able to speak to
19 at all the examination of vehicle provider that RTG
20 proposed, CAF?

21 MR. WOOD: Yeah, they're a Spanish
22 company. CAF were the chosen vehicle manufacturer
23 for Edinburgh, the project I worked on before.

24 MS. MCGRANN: Can you explain what
25 happened with the prequalification evaluation of

1 CAF?

2 MR. WOOD: CAF didn't score so well
3 because they had that cold weather experience for
4 the vehicle. They couldn't demonstrate it, and one
5 of the criteria was to have a revenue service
6 vehicle that's actually running in a cold climate,
7 which is the -- Ottawa is a very tough climate to
8 work in. It's a very onerous, environmental
9 condition, which is unlike many capitals around the
10 world, so it's a really tall order.

11 MS. MCGRANN: And was it your
12 understanding that also was Alstom was able to
13 demonstrate the cold weather performance the City
14 was looking for?

15 MR. WOOD: It was close to providing.
16 They had some early work in Moscow, which is
17 similar. It also had some Nordic commuter rail
18 experience as well, which is obviously very useful
19 as well. So Alstom is a very well respected
20 vehicle manufacturer. It would be the equivalent
21 of Ford, if you like, for car vehicles. So it's
22 probably the best choice for this environment.

23 If you compare OTP who chose
24 Bombardier, well, we would have had the Bombardier
25 issues that we had in Toronto.

1 MS. MCGRANN: The other question I have
2 is you referenced a pain share gain share
3 arrangement and I was wondering if you could just
4 explain what you were referring to?

5 MR. WOOD: It's in Schedule 20. There
6 are some reliability figures in there in which the
7 overall system has to achieve. If it doesn't
8 achieve those, then there are penalties for the
9 proponent in terms of performance, not meeting
10 performance. I think vehicle availability is one
11 of those. So they have to meet so much up time
12 versus downtime and it just stimulates this time
13 and it feeds into the characteristics of the
14 reliability calculations for the system.

15 MS. MCGRANN: And just for the sake of
16 the transcript, you referred to payback, is that a
17 payment mechanism?

18 MR. WOOD: Yes.

19 MS. MCGRANN: Those are my follow-up
20 questions. Thanks very much.

21 MS. MCLELLAN: So in terms of the
22 interview today, are there any issues that we
23 didn't discuss or any other issues that you believe
24 are relevant to the Commission's mandate that
25 should have been covered?

1 MR. WOOD: No, I think you've covered a
2 fairly good expansive subject there.

3 MS. MCLELLAN: So as part of the
4 Commission's mandate to receive and provide
5 recommendations on scope of the project, do you
6 have any specific recommendations that you have?

7 MR. WOOD: Yes, I would -- there are
8 three things that I would recommend.

9 So you've touched on them. I think you
10 already get a sense of that is that the system
11 assurance side needs to be much stronger on a
12 complex project like this. Systems engineering is
13 a de facto standard around the world, and most
14 projects that use it are successful coming on
15 budget and on time at least.

16 My other recommendation would be, and
17 this would be for the regulator, is for
18 professional engineers of Ontario, I would suggest
19 that they extend the certificate of authorization
20 to consortia so there is, in fact, a point of
21 contact for responsibility. That's important.

22 MS. MCLELLAN: Do you have a reason why
23 in terms of your second recommendation and
24 extending certificate authorization because that --

25 MR. WOOD: The certificate of

1 authorization, that nominates a professional
2 engineer as being responsible for a project. When
3 you've got consortia, you have a number of
4 different professional engineers all nominated, and
5 I think it saves confusion, and I think it would
6 just tidy up the whole certificate of authorization
7 process.

8 MS. MCLELLAN: Was that an issue that
9 you ran into on the project then?

10 MR. WOOD: I can't say on other
11 projects, but I think it would be a recommendation
12 from what I'm seeing, yeah.

13 MS. MCLELLAN: Okay. Ms. McGrann,
14 subject to any further questions you have --

15 MR. WOOD: I do have one final thing to
16 propose.

17 MS. MCLELLAN: Sorry.

18 MR. WOOD: That's okay. The third item
19 is that the safety assurance process needs to be
20 decoupled from the commercial and technical
21 processes. And that's pretty normal on most
22 railway systems as well, and that's because the
23 safety decisions need to be decoupled from
24 financial decisions.

25 MS. MCGRANN: Can you explain in a

1 little bit more detail what you mean by that?

2 MR. WOOD: Sure. So if a safety
3 officer has a particular concern and a technical
4 director would like to override them, they should
5 have that position. It's mandated in 50126 that
6 they're decoupled, and that gives you some
7 independence of decision-making.

8 MS. MCGRANN: Did you see any instances
9 of a technical director overriding concerns raised
10 by a safety officer on this project?

11 MR. WOOD: No, not in this case, but in
12 the true sense of 50126, it talks about keeping the
13 commercial aspects away from the safety decision.
14 It makes sense.

15 MS. MCGRANN: Okay. No further
16 questions from my end. We promised your counsel
17 that they would have the opportunity to ask
18 follow-up questions, and we certainly have time.
19 Any questions from you?

20 MS. GARDNER: Thanks, Ms. McGrann, I
21 don't have any questions at this time. Thank you.

22 MS. MCGRANN: I think that brings our
23 questions to and end then. So thank you very much
24 for your time this evening where you are.

25

1 -- Whereupon the examination concluded
2 at 4:00 p.m.

3 REPORTER'S CERTIFICATE
4

5 I, COLLEEN REA, CSR, Certified
6 Shorthand Reporter, certify;

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

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

15 That the foregoing is a true and
16 correct transcript of my shorthand notes so taken.
17

18 Dated this 3rd day of May, 2022.
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