

Ottawa Light Rail Commission

Keith Mackenzie
on Wednesday, April 13, 2022



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

neesonsreporting.com | 416.413.7755

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OTTAWA LIGHT RAIL COMMISSION
STV INC. - KEITH MacKENZIE
APRIL 13, 2022

--- Held via Zoom Videoconferencing, with all
participants attending remotely, on the 13th day
of April, 2022, 9:00 a.m. to 12:02 p.m.

1 COMMISSION COUNSEL:

2

3 Kate McGrann, Co-Lead Counsel Member

4 Daniella Muryнка, Litigation Counsel Member

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6

7 PARTICIPANTS:

8

9 STV INC.:

10 Keith MacKenzie

11

12 Michael O'Brien, Esq., Tyr LLP

13 James Doris, Esq., Tyr LLP

14 Theodore Milosevic, Esq., Tyr LLP

15

16

17 ALSO PRESENT:

18

19 Judith Caputo, Stenographer/Transcriptionist

20 Alicia Sims, Virtual Technician

21

22

23

24

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INDEX OF EXHIBITS

NUMBER/DESCRIPTION	PAGE NO.
1: Curriculum Vitae of Keith MacKenzie.	7

* * The following is a list of documents undertaken
to be produced or other items to be followed up * *

INDEX OF UNDERTAKINGS

The documents to be produced are noted by U/T and
appear on the following pages: (None).

1 -- Upon commencing at 9:00 a.m.

2

3 KEITH MACKENZIE: AFFIRMED.

4 KATE McGRANN: Good morning,

5 Mr. MacKenzie.

6 My name is Kate McGrann. I'm one of

7 the co-lead counsel for the Ottawa Light Rail

8 Transit Public Inquiry.

9 I'm joined by a colleague, Daniella

10 Murynka, who is also working for the Commission,

11 and another member of the Commission team.

12 Before we start our discussion today, I

13 just want to give you some information about the

14 purpose of this interview and how the information

15 that you provide today will be used.

16 So the purpose of today's interview is

17 to obtain your evidence under solemn oath or

18 declaration for use at the Commission's Public

19 Hearings.

20 This will be a collaborative interview,

21 such that my co-counsel may intervene to ask

22 certain questions. If time permits, your counsel

23 may also ask follow-up questions at the end of the

24 interview.

25 This interview is being transcribed and

1 the Commission intends to enter this transcript
2 into evidence at the Commission's Public Hearings,
3 either at the hearings or by way of a procedural
4 order before the hearings commence.

5 The transcript will be posted to the
6 Commission's public website, along with any
7 corrections made to it after it is entered into
8 evidence.

9 The transcript, along with any
10 corrections later made to it, will be shared with
11 the Commission's participants and their counsel on
12 a confidential basis before being entered into
13 evidence.

14 You will be given the opportunity to
15 review your transcript and correct any typos or
16 other errors before the transcript is shared with
17 the participants or entered into evidence. Any
18 non-typographical corrections made will be appended
19 to the transcript.

20 Pursuant to Section 33(6) of the Public
21 Inquiries Act 2009: A witness at an inquiry shall
22 be deemed to have objected to answer any question
23 asked him or her upon the ground that his or her
24 answer may tend to incriminate the witness, or may
25 tend to establish his or her liability to civil

1 proceedings at the instance of the Crown or of any
2 person, and no answer given by a witness at an
3 inquiry shall be used or be receivable in evidence
4 against him or her in any trial or other
5 proceedings against him or her thereafter taking
6 place, other than a prosecution for perjury in
7 giving such evidence.

8 As required by Section 33(7) of that
9 Act, you are hereby advised that you have the right
10 to object to answer any question asked under
11 Section 5 of the Canada Evidence Act.

12 And as I've mentioned earlier, if
13 anyone at any time needs to take a break, just let
14 us know.

15 Do you have any questions about any of
16 that?

17 KEITH MacKENZIE: No.

18 KATE McGRANN: Okay. For starters
19 then, in response to our request, your counsel
20 shared a copy of your CV with us, which I am now
21 going to show to you.

22 Mr. MacKenzie, I'm showing you, I
23 believe it's a three-page document that I'm going
24 to scroll through relatively quickly.

25 My question for you is, do you

1 recognize this document?

2 KEITH MacKENZIE: Yes, I do.

3 KATE MC GRANN: And is this your CV?

4 KEITH MacKENZIE: Yes, it is.

5 KATE McGRANN: We'll mark that as
6 Exhibit 1 to your examination transcript and I will
7 stop sharing my screen.

8 EXHIBIT NO. 1: Curriculum Vitae of
9 Keith MacKenzie.

10 KATE McGRANN: For starters, over what
11 time period did you work on Stage 1 of the Ottawa
12 Light Rail Transit Project?

13 KEITH MacKENZIE: Late 2010 to early 2013.

14 KATE McGRANN: And what was your title
15 during that time?

16 KEITH MacKENZIE: Project manager.

17 KATE McGRANN: And did somebody step
18 into your role when you stopped working on the
19 project in 2013?

20 KEITH MacKENZIE: The role was revised
21 some, and someone did step in, yes. We had
22 completed our design work. I stepped away; someone
23 stepped in.

24 KATE McGRANN: Okay. And when you
25 began the role, were you taking over from somebody

1 else, or was that the beginning of STV's work on
2 the project?

3 KEITH MacKENZIE: I took over for
4 somebody else.

5 KATE McGRANN: Who did you take over
6 from?

7 KEITH MacKENZIE: Brewerton Clarke.

8 KATE McGRANN: Okay. Do you know how
9 long that person had been in the role before you
10 took over?

11 KEITH MacKENZIE: Roughly three months.

12 KATE McGRANN: As project manager for
13 STV on the Ottawa Light Rail Transit Project, what
14 was your role and what were your responsibilities?

15 KEITH MacKENZIE: My role was to manage
16 the project, broadly. And my responsibilities were
17 to deliver a set of contract documents, which was
18 later determined to be a design-build-maintain-finance
19 contract.

20 KATE McGRANN: When you say "deliver a
21 set of contract documents", can you be more
22 specific about what documents you were to deliver?

23 KEITH MacKENZIE: Project-specific
24 output specifications, as we call them "PSOS",
25 P-S-O-S. And drawings that we referred to as

1 "proof of concept drawings"; roughly 30 percent
2 design drawings.

3 KATE McGRANN: Stepping back for a
4 moment. What was STV's role, more generally, on
5 the project during the time that you were working
6 on it?

7 KEITH MacKENZIE: We were the lead for
8 a joint venture that was formed known as, "Capital
9 Transit Partners".

10 We performed various design
11 responsibilities, including the systems work
12 broadly, which involves train control, traction
13 power, communications.

14 We also prepared the specifications for
15 the vehicles. That's the majority of the work that
16 I recall.

17 KATE McGRANN: Okay. And that's the
18 work that STV was doing. What work were the
19 partners in the JV doing?

20 KEITH MacKENZIE: That's a very broad
21 question.

22 KATE McGRANN: During the time that you
23 were working on the project, the late 2010 to 2013
24 time period?

25 KEITH MacKENZIE: Yeah, understood.

1 KATE McGRANN: Still broad?

2 KEITH MacKENZIE: My answer to the
3 question is that there's an awful lot of work that
4 has to take place in order to create a set of
5 30 percent design drawings and output
6 specifications and coordinate that work with the
7 rest of the contract sections.

8 So it was, you know, very broadly
9 speaking, all of the technical aspects of the
10 contract. All of the engineering and coordination
11 that needs to take place in order to put a
12 design-build-maintain-finance contract on the
13 street.

14 KATE McGRANN: So let's come at it this
15 way. I understand STV was looking at the system's
16 vehicle specifications. Were there general areas
17 that were headed up by the other partners in the
18 JV?

19 KEITH MacKENZIE: Certainly. Tunneling,
20 bridges, intersection design, station design. I do
21 recall now we also did the maintenance facility, I
22 think that was primarily STV's responsibility.

23 Other work would be traffic management,
24 utility coordination, environmental permitting.

25 KATE McGRANN: All of those topics fell

1 under STV's responsibilities?

2 KEITH MacKENZIE: No. All of those
3 topics are associated with putting together
4 contract documents for bid.

5 KATE McGRANN: Can you walk me
6 through -- I think I understand that in the context
7 of that work, STV is focused on systems design,
8 vehicle delivery, the maintenance facility.

9 What areas were covered by your
10 partners in the JV?

11 KEITH MacKENZIE: Yeah, if I can
12 correct one thing.

13 The vehicle delivery is not the correct
14 way to phrase that. We wrote the contract
15 requirements for the vehicle.

16 KATE McGRANN: Okay.

17 KEITH MacKENZIE: The other areas that
18 I had mentioned were the areas that other members
19 of the JV have responsibility for, bridges,
20 stations, utility coordination, maintenance of
21 traffic, environmental permitting.

22 KATE McGRANN: Okay. And walk me
23 through which of the JV partners was responsible
24 for each of those areas, and identify them.

25 KEITH MacKENZIE: I'll do that to the

1 best of my ability. It's been almost ten years
2 now, but some of them stand out.

3 There was a firm, Jacobs McMillen is
4 how they're known now. They were responsible
5 primarily for tunneling.

6 URS, which was purchased by AECOM, was
7 responsible primarily for stations.

8 Morrison Hershfield was our other
9 partner. They did a lot of the civil work,
10 bridges, utilities. And I believe Morrison and
11 Hershfield also did most of the environmental
12 permitting.

13 KATE McGRANN: The maintenance
14 facility, who was heading that one?

15 KEITH MacKENZIE: That was us, that was
16 STV.

17 KATE McGRANN: Did STV in its work
18 during the time that you were there, interact with
19 Parsons?

20 KEITH MacKENZIE: Parsons Transportation
21 Group?

22 KATE McGRANN: I understand that
23 Parsons was brought on as an owner's engineer by
24 the City. I'm just wondering if you would know
25 how --

1 KEITH MacKENZIE: To the best of my
2 recollection, they were not brought on between 2010
3 and 2013.

4 KATE McGRANN: Okay. When you started
5 working on the project, what information was
6 available to you about what the City wanted out of
7 the light rail vehicle that would be involved in
8 Stage 1?

9 KEITH MacKENZIE: The primary goal for
10 the vehicles as we started our work was to move a
11 certain number of people per hour, per direction.

12 And I believe the ultimate target, it
13 was out in some date in the future, I don't recall,
14 maybe 2030 or 2040, and I believe the target was
15 about 18,000 people per hour, per direction.

16 Otherwise, the vehicle was fairly open
17 for innovation by the bidders, to bring to the bid
18 the vehicle they saw as best fit for the demand.

19 KATE McGRANN: And when you first
20 started on the project, what information was
21 available to you about the delivery model that the
22 City would be using?

23 And by that I mean, the P3 model,
24 design-build-finance-maintain; what stage was the
25 City at the time at which you came on?

1 KEITH MacKENZIE: When we started in
2 2010, the City was leaning heavily towards a form
3 of P3 design-build, design-build-operate-maintain,
4 design-build-maintain; but it hadn't yet been
5 determined what model we would pursue.

6 We were working towards a design-build
7 model from an engineering perspective, and then the
8 operation and maintenance is really something that
9 would be added to the contract, but not a direct
10 influence on the design of a bridge, for example.

11 So that's how we started the work.

12 KATE McGRANN: At what point in the
13 process did you understand that the City had made a
14 final decision about the delivery model that it
15 would be using?

16 KEITH MacKENZIE: I think it was late
17 2011, or later 2011.

18 KATE McGRANN: I think the RFP is
19 released in the fall of 2011, so in advance of
20 that, basically?

21 KEITH MacKENZIE: Okay. Yeah, it would
22 have been in advance of that. I think it was maybe
23 4 to 6 months in advance of that.

24 KATE McGRANN: Did the selection of a
25 DBFM model affect the work you were doing on the

1 preliminary engineering or the PSOS for the
2 vehicle?

3 KEITH MacKENZIE: Only to the extent
4 that all of the pieces of the contract have to be
5 woven together, but not so much on the technical
6 content of the design.

7 KATE McGRANN: From the -- looking
8 specifically at the question of the vehicle, would
9 your output vehicle be different if the City had
10 opted to go by way of design-build, for example, as
11 compared to design-build-finance-maintain?

12 KEITH MacKENZIE: No.

13 KATE McGRANN: In either circumstances
14 you're putting together costs for the bidders to
15 work with?

16 KEITH MacKENZIE: Yes.

17 KATE McGRANN: So you said that when
18 you started, the information that was provided to
19 you about what the City wanted out of the vehicle
20 was to be able to move a certain number of people
21 per hour and per direction, based on a projection
22 of prospective ridership in the future, I believe;
23 is that right?

24 KEITH MacKENZIE: That's correct.

25 KATE McGRANN: Over the course of the

1 time that you were there, did the City provide you
2 with additional requirements that it needed to be
3 included in the work that you were doing?

4 KEITH MacKENZIE: Yes.

5 KATE McGRANN: Do you know how the City
6 came to determine what those requirements were?

7 KEITH MacKENZIE: The one requirement
8 that stands out for me in my recollection is the
9 density that they wanted to plan for the vehicle.

10 KATE McGRANN: Can you explain what
11 that means?

12 KEITH MacKENZIE: Yes. The number of
13 people that would fit on a train.

14 KATE McGRANN: Okay.

15 KEITH MacKENZIE: And that, I think
16 we're familiar with stories or images of some
17 countries that, you know, actually pack people into
18 trains. The City determined that they wanted to
19 have so many square meters or square feet per
20 person as a design basis for how big the train had
21 to be.

22 They knew how many people would need to
23 be carried on the train, and if they set that
24 parameter, that would then determine either the
25 size of the train or the frequency of the train.

1 So we were given, you know, based on
2 ridership comfort, that that number would be
3 limited and set in the contract.

4 There was also an operating speed that
5 they wanted to achieve. So that was another
6 parameter.

7 KATE McGRANN: And do you know how the
8 City determined what operating speed they wanted to
9 achieve?

10 KEITH MacKENZIE: I believe it was
11 based on their desire to have extensions in the
12 future. And the uncertainty of how far it might be
13 between stops, station stops. A train that can
14 travel at a higher speed would obviously be
15 beneficial when you have long distances between
16 station stops.

17 KATE McGRANN: And do you know, was
18 any -- I'm trying to think of the right way to
19 phrase this. Was any assessment done of whether
20 the City's requirements were reasonable, what the
21 potential implications for those requirements would
22 be on other aspects of the train or the system more
23 generally?

24 KEITH MacKENZIE: Could you repeat
25 that? The first part.

1 KATE McGRANN: I can try.

2 What assessment was done about the
3 reasonableness or the achievability of the City's
4 requirements?

5 KEITH MacKENZIE: The requirements were
6 viewed as being within industry norms, and
7 achievable.

8 KATE McGRANN: Okay. Viewed by whom?
9 Who made that determination?

10 KEITH MacKENZIE: The designers with
11 the experience in that field.

12 KATE McGRANN: And who were they?

13 KEITH MacKENZIE: I believe we had Greg
14 Barstow as our vehicle engineer at that time.

15 KATE McGRANN: So it was somebody
16 working for STV?

17 KEITH MacKENZIE: STV employee, yeah,
18 correct.

19 KATE McGRANN: And to be fair to you, I
20 also need to let you finish your answer. So I will
21 try. I know it's difficult, particularly for Judy,
22 so I'll try to hold back here.

23 I understand there was a requirement
24 that the vehicles be low-floor and 100 percent low
25 floor. Am I right about that?

1 KEITH MacKENZIE: I believe you are.

2 KATE McGRANN: Do you know what the
3 reason for that requirement was?

4 KEITH MacKENZIE: Accessibility.

5 KATE McGRANN: And can we dig into that
6 a little bit more?

7 My understanding is that these vehicles
8 all went to dedicated stations. So where is the
9 low floor requirement for accessibility if the
10 vehicles are pulling into stations designed to
11 receive them?

12 KEITH MacKENZIE: If someone who is
13 either in a wheelchair, perhaps pushing a stroller,
14 may have some mobility issues, would not be
15 restricted to an area that they couldn't gain
16 access to because of steps or a slope that was too
17 steep.

18 KATE McGRANN: And I guess my question
19 is, were there any -- was there any danger that
20 that would be the case given that the trains are
21 pulling into stations that are designed for them.

22 Couldn't the platform level just be
23 designed to meet the train wherever the train was
24 at?

25 KEITH MacKENZIE: Some light rail

1 vehicles have low levels that are not at a constant
2 elevation inside the train. Although the doors
3 would line up with the platform, sometimes the
4 floor levels step up over the axles.

5 And where that steps up, you would not
6 be able to gain access if you were in a wheelchair.
7 Pushing a stroller would certainly be difficult, or
8 if you had mobility issues.

9 KATE McGRANN: Are those vehicles
10 generally used in city traffic? They're designed
11 to run within the streets, for example? Is that
12 the idea?

13 I'm just trying to understand, like,
14 couldn't the same thing be achieved with
15 100 percent high floor with everything living
16 underneath the train and the floor being level with
17 the platform?

18 KEITH MacKENZIE: Could you clarify
19 when you say "those vehicles" which vehicles you're
20 referring to?

21 KATE McGRANN: Yes. The vehicles that
22 you describe that have a low entrance and then a
23 step up within the vehicle.

24 KEITH MacKENZIE: So there are vehicles
25 that exist, particularly older vehicles, that have

1 a lower entry level so you can step up on the
2 vehicle from a street running environment. And
3 then also step up inside the train. Those vehicles
4 do exist.

5 With the advances in the focus on
6 accessibility, those are becoming less favourable
7 from those users who need that additional mobility,
8 that need help with the additional mobility.

9 So they do exist. The agencies are
10 leaning towards 100 percent low floor vehicle as a
11 preference.

12 KATE McGRANN: If you're working with a
13 vehicle that's not running within city streets, and
14 so there isn't a requirement to be able to access
15 from the city street, you're accessing from a
16 platform at every possible stop, is the low floor
17 still required for achieve a vehicle that has one
18 floor level through it?

19 KEITH MacKENZIE: No.

20 KATE McGRANN: What other options
21 exist?

22 KEITH MacKENZIE: As you've described,
23 a higher floor that is all at the same level would
24 certainly be an option.

25 KATE McGRANN: Was that considered for

1 this project?

2 KEITH MacKENZIE: No.

3 KATE McGRANN: Do you know why not?

4 KEITH MacKENZIE: Yes.

5 KATE McGRANN: Can you tell me why?

6 KEITH MacKENZIE: I will tell you why.

7 When we started Stage 1, the City had
8 not yet concluded its planning studies on future
9 expansions for this transit system.

10 And the possibility that this transit
11 system might be running farther away from the City
12 centre in a suburban environment, which might have
13 street-level boardings, was still a possibility.

14 So the City was preserving the
15 possibility of that future operating scenario,
16 where they were street running?

17 KATE McGRANN: Was that planning work
18 completed during the time that you were working on
19 the project?

20 KEITH MacKENZIE: No.

21 And by "the project" you mean Stage 1?

22 KATE McGRANN: Yes.

23 KEITH MacKENZIE: So "no" is my answer.

24 KATE McGRANN: Staying with the work
25 that you did on the vehicle for a second.

1 Can you walk us through the stages of
2 work that you did to arrive at the 30 percent
3 design for the vehicles and the PSOS specifications
4 for the vehicles?

5 KEITH MacKENZIE: I can try. I'm not
6 the vehicle designer or vehicle engineer, so my
7 response will be from that perspective as a project
8 manager and not the vehicle engineer.

9 KATE McGRANN: Understood.

10 KEITH MacKENZIE: There were several
11 things that were taken into consideration in the
12 development of the vehicle. As I had said
13 previously, the capacity of the vehicle, the
14 ability to move, I think again, roughly 18,000
15 people per hour per direction at some point in the
16 future.

17 Accessibility throughout the train.
18 The ability to operate, I think 100 kilometers per
19 hour was the goal. The noise was a concern as
20 well; so a vehicle that would not emit a lot of
21 noise.

22 I think -- and I'm not 100 percent
23 clear on this -- but I think the number of
24 articulations or baffles was also a consideration.

25 And then also its performance

1 characteristics, how quickly can it accelerate,
2 decelerate, braking distances.

3 Generally, the performance, what I
4 would refer to as performance criteria for the
5 vehicles which would impact its ability to move
6 people in an efficient manner.

7 Of course, safety is always paramount
8 on vehicles; so that was also a consideration, but
9 that's almost a given in all of the design of a
10 transit system.

11 KATE McGRANN: Did STV speak to any
12 vehicle providers at any point in the design work
13 that it was doing to assist in that work, to
14 understand what was available in the market, things
15 like that?

16 KEITH MacKENZIE: Yes.

17 KATE McGRANN: Can you tell me about
18 what those discussions looked like?

19 KEITH MacKENZIE: Certainly. It's
20 called "industry outreach". So in order to
21 understand more precisely the offerings that were
22 available by the various vehicle manufacturers,
23 industry outreach was held to several vehicle
24 manufacturers.

25 KATE McGRANN: And so you said the

1 purpose of those meetings is to understand what is
2 currently available. How was the information
3 obtained through those meetings used in the design
4 work that STV was doing?

5 KEITH MacKENZIE: We wanted to make
6 sure that what we were writing in the contract was
7 achievable and obtainable. I think this goes back
8 to your earlier question about the assessment of
9 the criteria that the City had put forward. So we
10 met with several manufacturers.

11 KATE MC GRANN: Do you remember the
12 names of the vehicle manufacturers that were met
13 with?

14 KEITH MacKENZIE:: I don't.

15 KATE McGRANN: Sorry, go ahead.

16 KEITH MacKENZIE: You know, I'm
17 familiar with several manufacturers of vehicles in
18 the industry, but I can't -- I don't have a
19 distinct recollection of which ones that we met
20 with.

21 I do know that at the time of bid we
22 received three bids, and each bidder had a
23 different vehicle manufacturer.

24 KATE McGRANN: I understand that as
25 part of the industry outreach, the companies that

1 STV and others working on this project met with,
2 those companies provided a proposed vehicle that
3 was evaluated and scored against a series of
4 criteria; is that consistent with what you
5 remember?

6 KEITH MacKENZIE: I don't think that's
7 100 percent accurate as I understand the question.

8 KATE McGRANN: Help me with what I've
9 got wrong.

10 KEITH MacKENZIE: The evaluation of the
11 vehicles were done at the time of bid, not at the
12 industry outreach.

13 KATE McGRANN: So what was done with
14 the presentations that the vehicle manufacturers
15 made to STV as part of the industry outreach work
16 that was done?

17 KEITH MacKENZIE: It was used as a
18 confirmation that the parameters that were being
19 developed in the PSOS were achievable.

20 KATE McGRANN: And who would be best
21 positioned at STV to speak to the industry outreach
22 work that was done as part of the vehicle design?

23 KEITH MacKENZIE: Likely Greg Barstow.

24 KATE McGRANN: Was there any interest
25 in the part of the City to, if possible, work with

1 a vehicle that was already in use elsewhere in the
2 world in similar conditions, weather conditions to
3 Ottawa or otherwise?

4 KEITH MacKENZIE: Absolutely.

5 KATE McGRANN: Can you explain to me
6 how STV learned of that requirement; or how that
7 requirement was landed on?

8 KEITH MacKENZIE: It's not unusual for
9 an agency to want what is referred to as a "service
10 proven vehicle".

11 There's a very strong desire to have a
12 high level of reliability and one way to achieve
13 that is use a vehicle that has been in service in
14 similar climatic conditions, and general service
15 conditions.

16 KATE McGRANN: How was that desire to
17 have a service-proven vehicle used translated into
18 the PSOS?

19 KEITH MacKENZIE: I believe there were
20 actually requirements written into the PSOS that
21 the vehicle had to be in service in similar
22 conditions for a number of years.

23 KATE McGRANN: To your knowledge, did
24 those requirements remain in the PSOS throughout
25 the procurement period?

1 KEITH MacKENZIE: I believe they did.

2 KATE McGRANN: It is my understanding
3 that the vehicle that was ultimately chosen for the
4 project, the Alstom Citadis Spirit, was a new model
5 that had not been used anywhere before. It was a
6 first time for Ottawa. Is that consistent with
7 your understanding?

8 KEITH MacKENZIE: No.

9 KATE McGRANN: Pardon me?

10 KEITH MacKENZIE: No.

11 KATE McGRANN: Okay. So help me
12 understand what I've got wrong there.

13 KEITH MacKENZIE: I believe the premise
14 was that the vehicle that was constructed in Ottawa
15 and delivered was built from an existing platform
16 that had been in use in similar conditions.

17 It was an evolution of an existing
18 vehicle.

19 KATE McGRANN: So if it's an evolution
20 of an existing vehicle, changes have to be made to
21 it, right?

22 KEITH MacKENZIE: Some were made to
23 that platform, I believe, yes.

24 KATE McGRANN: And are you in a
25 position to speak to the changes that were made and

1 the impact those changes would have on the notion
2 of the vehicle being service-proven?

3 KEITH MacKENZIE: No, that's outside of
4 my area of expertise.

5 KATE McGRANN: And who should I speak
6 to from STV about that?

7 KEITH MacKENZIE: Again, Greg Barstow
8 was our vehicle engineer at that time.

9 KATE McGRANN: When you started on the
10 project in 2010, I believe a budget had already
11 been set for the project overall of \$2.1 billion;
12 does that ring a bell to you?

13 KEITH MacKENZIE: The \$2.1 billion does
14 ring a bell. I'm not certain on the timeline of
15 the establishment of that number.

16 KATE McGRANN: As part of the work that
17 STV was doing in its preliminary engineering, did
18 it have to take into account the budget that had
19 been set for the project?

20 KEITH MacKENZIE: Yes. Again, I'm not
21 sure on the timeline of when that budget was
22 established. But we did do cost estimates to
23 arrive at what we thought the project would cost to
24 construct.

25 KATE McGRANN: Then the cost estimating

1 work that you did, do you recall if that work was
2 constrained by a budget at all? Or, like, what
3 constraints were put on that cost estimating work
4 that was done?

5 KEITH MacKENZIE: I believe the
6 planning work that was done prior to our work
7 established a preliminary budget. And it may have
8 been 2.1, I'm not sure. But the planning studies
9 would have established an approximate value for
10 what the project would cost.

11 We performed an estimate to see what
12 number we came up with based on, you know, the
13 additional design work that we had done, and the
14 evolution of the project since the planning study
15 was completed.

16 We were aware of the number that was
17 established in the planning study. Again, I don't
18 recall if it was 2.1 billion or if that was
19 established after the fact. But during our work,
20 it certainly became clear that that was the budget
21 that we were trying to achieve.

22 KATE McGRANN: In the cost estimating
23 work that you did, do you remember if the initial,
24 or the result of that work, were within the budget
25 or beyond the budget?

1 KEITH MacKENZIE: I think our early
2 work had us slightly above that number.

3 KATE McGRANN: Do you remember what
4 kind of magnitude of overage you were looking at?

5 KEITH MacKENZIE: I don't recall. It
6 was not significant.

7 KATE McGRANN: When you say it was "not
8 significant", what do you mean by that?

9 KEITH MacKENZIE: I don't believe it
10 was, you know, for example twice that number. But
11 I think it may have been in the hundred million or
12 few hundred million dollar over that budget, which
13 is still an awful lot of money but relative, it's,
14 you know, within, with ten percent or so, that's
15 usually pretty close for an estimate at that stage.

16 KATE McGRANN: Did you or did anyone at
17 STV to your knowledge have any concerns about
18 whether the project as envisioned by the City could
19 be achieved within the budget that the City had
20 set?

21 KEITH MacKENZIE: That's always a
22 concern as a designer, to deliver the project
23 within the scope that the client wants and within
24 the dollars that the client is hoping for.

25 So we were always very conscious of the

1 cost of things that we're designing. Particularly,
2 if something like, as we refer to it in the
3 industry as "scope creep" occurred, as the project
4 got larger, if elements got added without
5 additional budget.

6 So we resisted that type of scope creep
7 and were very conscious of it.

8 KATE McGRANN: Do you remember any
9 particular instances of scope creep that were of
10 particular concern or presented particular
11 challenges on this project?

12 KEITH MacKENZIE: I don't recall any
13 particular scope creep uniquely. There were lots
14 of design challenges that we solved in order to
15 find the best solutions for the City.

16 For example, when we started our
17 design, we were in a different alignment. We were
18 a block farther south than where the alignment
19 ended up.

20 We also had some challenges that
21 related to how the tunnel alignment passed the
22 Rideau Canal. There's also a large sewer that's
23 deeper than the Rideau Canal, so we had to fit the
24 alignment through that. We call it threading the
25 needle.

1 All of these are complex engineering
2 and construction techniques that need to take
3 place. So they -- how those things are solved have
4 a significant impact on the cost of the project.
5 So we were always working to find the best
6 solution, both alignments and anticipated
7 construction costs.

8 Also recognizing that the contractors
9 often would have different approaches. Some
10 contractors might have a particular skill set that
11 would lend them toward a solution that might differ
12 from another bidder, because either equipment or
13 skill sets that these bidders have that are
14 different from each other.

15 So while we were trying to be conscious
16 of the budget, we were also being conscious of the
17 ability of contractors to bring in their best
18 price, while meeting the requirements of the
19 contract.

20 An example of that is the tunneling
21 techniques that were used for the tunnels that were
22 placed through the centre of the City.

23 We thought they might go with a tunnel
24 boring machine, so we made sure that the utilities
25 were available to power that machine; it takes an

1 awful lot of energy.

2 But we did not exclude other approaches
3 for constructing this tunnel, such as one technique
4 is called, cut and cover; that was permissible by
5 the contract. And I think ultimately the bidder
6 who was most successful did something different
7 than either of those approaches.

8 But we picked the alignment that we
9 thought was best and left means and methods up to
10 the contractors in order to bring their skill sets
11 to the table, to the bid, so that they could build
12 what had been put in the contract in the most
13 efficient manner.

14 KATE McGRANN: So it sounds like you're
15 engaged in a balancing act between prescriptiveness
16 in terms of what the City is looking for and then
17 leaving room for innovation, allowing the bidders
18 to present what they view as the best and most
19 efficient way to achieve what the City is looking
20 for; is that fair?

21 KEITH MacKENZIE: I think that is fair.
22 And I think broadly speaking, that is the goals of
23 a P3 type of procurement approach.

24 KATE McGRANN: Coming back to the
25 initial cost estimate, which was over what the

1 City's budget was, did you and the members of your
2 team and the JV more generally, undertake any value
3 engineering work in an effort to try to bring your
4 30 percent design or the PSOS within the City's
5 budget?

6 KEITH MacKENZIE: Yes, we did.

7 KATE McGRANN: Can you tell me what
8 value engineering you recall doing that allowed
9 those costs to be brought down within the City's
10 budget?

11 KEITH MacKENZIE: We reduced the length
12 of the platform, I believe, is one area that we
13 were able to achieve while preserving the ability
14 to expand the platforms if they needed to be.

15 I think the planning studies had the
16 platforms at -- I don't remember the exact number
17 but it was longer than what we ended up with,
18 significantly longer.

19 We looked at it and believed that those
20 platforms were too large. But recognized that at
21 some point in the future, and I mean, you know,
22 50 years from when we opened, there might be a need
23 for a longer platform.

24 So we reduced the length of the
25 platform in initial build, but reserved the real

1 estate for future expansions if and when they were
2 needed. That was one area.

3 We tried to talk the City out of having
4 redundant elevators at all of the stations; we were
5 unsuccessful in that. They were very much focused
6 on the rider experience, rightfully so, I think.

7 But reducing the elevators was one area
8 we looked at. Again, that was unsuccessful.

9 I don't recall if -- we may have had
10 escalators in both the up and down directions.
11 Initially I believe we reduced that to having them
12 only in the up direction in the end.

13 So travelling down into the underground
14 stations or any stations that were lower than the
15 entry level was by elevator or by stairs.

16 And when you're travelling up you can
17 use an escalator, stair or elevator. So I think we
18 reduced the number of escalators.

19 Those are a couple of the items that
20 come to mind. I don't recall any other at this
21 point.

22 KATE McGRANN: Stepping back from that
23 level of specificity for a minute, I'd like to
24 understand how STV worked with the City in terms of
25 day-to-day work and how STV reported back to the

1 City and received direction.

2 Can you explain that?

3 KEITH MacKENZIE: Sure. We had an
4 integrated office approach. So myself and several
5 of my core team members were located in Ottawa and
6 in some cases in the same -- in all cases in the
7 same building with the Rail Implementation Office,
8 as it was known.

9 The City had managers from most of the
10 disciplines that we worked on, who worked closely
11 with us. For example, we had an engineer who
12 worked with our station designer, and they would
13 critique and evaluate the work we were doing on a
14 regular basis.

15 So we worked very closely with City
16 staff and consultants that the City had hired.

17 But to us it was all City staff.
18 That's the way the Rail Implementation Office
19 presented itself was as a single entity; as the
20 Rail Implementation Office.

21 So we worked closely with a lot of the
22 City staff and city's advisors that they had
23 working for them.

24 KATE McGRANN: Okay. If I understand
25 your answer correctly, STV is holding the pad on

1 the designs, and the representatives of the City
2 that you're working with are sitting there in a
3 review/question/critique direction role; is that
4 fair?

5 KEITH MacKENZIE: Yes. Yes.

6 Ultimately -- I just hesitate on the "direction"
7 portion of that question. Because ultimately as
8 the designers we were responsible for that work.

9 So, you know, engineers can only take
10 direction to a certain degree, and then they have
11 their professional obligations to meet.

12 But generally, you know, my answer was,
13 yes.

14 KATE McGRANN: Okay. What other
15 consultants were working with you in that
16 environment? From what companies, is what I mean?

17 KEITH MacKENZIE: For the City?

18 KATE McGRANN: Yes.

19 KEITH MacKENZIE: They were all
20 independent contractors, meaning that they were
21 self-employed. And I don't recall the names of
22 their firms.

23 KATE McGRANN: Did STV have any role in
24 assessing what kind of expertise the City may need
25 to bring in from outside or identifying advisors

1 that the City may retain to assist?

2 KEITH MacKENZIE: In the time that I
3 was there, no.

4 KATE McGRANN: How did STV and its
5 joint venture partners report on progress of the
6 work that was being done to the City? I understand
7 you're embedded in the office so there's some
8 real-time information being shared.

9 But was there any kind of regular
10 reporting or feedback seeking that took place?

11 KEITH MacKENZIE: Yes.

12 KATE McGRANN: Can you describe what it
13 is?

14 KEITH MacKENZIE: Yes. We provided a
15 15 percent design submittal that was reviewed by
16 the City staff that included some outline
17 specifications and the 15 percent drawings that we
18 had developed.

19 We had a similar check-in point at the
20 30 percent design. So there were formal
21 submissions and checkpoints along the way.

22 KATE McGRANN: With respect to the
23 30 percent design, that was the final version of
24 the design work that you were doing in this stage,
25 if I understand correctly?

1 KEITH MacKENZIE: It was a submission
2 prior to finalizing the contract.

3 KATE McGRANN: Okay.

4 KEITH MacKENZIE: So the City looked at
5 what we had done and they reviewed, commented,
6 accepted, depending on the circumstances.

7 But once that process was complete,
8 then it became the proof of concept drawings that
9 were available to the bidders. But it went through
10 our City prior to that.

11 KATE McGRANN: So you submit your
12 30 percent design, the City reviews and provides
13 feedback, feedback incorporated where appropriate
14 and the result is the proof of concept designs?

15 KEITH MacKENZIE: Correct.

16 KATE McGRANN: Was there an iterative
17 process back and forth with the City, either with
18 the 15 percent submission, or the 30 percent
19 submission to work through the feedback and deal
20 with, for example, the fact that engineers can only
21 take direction so far. So this piece isn't going
22 to work; what if we try this differently? That
23 kind of approach?

24 KEITH MacKENZIE: If I understand your
25 question, was the City's feedback influential in

1 our design? Was that your question?

2 KATE McGRANN: That's a cleaner version
3 of some of what I asked, so let's start with that.

4 KEITH MacKENZIE: To the degree that it
5 was appropriate and agreeable, yes.

6 KATE McGRANN: And I guess I'm going to
7 ask you this. When, for example, the 15 percent
8 design submission is provided, did the City review
9 and provide feedback in a document or a single set
10 of documents? Did you receive all the feedback in
11 one package?

12 KEITH MacKENZIE: I don't have a clear
13 recollection of that. My thoughts are that it
14 would likely have been by discipline or by area.

15 For example, the people that were doing
16 the bridge design and were working closely with the
17 bridge designers, would have commented on that.

18 That would have been a group of
19 comments, and then separately, someone reviewing
20 the station design would have had a group of
21 comments.

22 I don't recall whether they were put
23 together in one continuous document with sections.
24 But that is likely the scenario that would have
25 taken place.

1 KATE McGRANN: Was there an opportunity
2 for you and your JV partners to respond to the
3 City's feedback with opinions, offer alternatives,
4 seek further information from the City before you
5 then proceeded to refine in response to the
6 feedback?

7 KEITH MacKENZIE: Again, I don't have a
8 clear recollection, based on the time. But
9 normally, the normal process, and what I suspect
10 was the process in Ottawa, is a meeting to review
11 comments, discuss comments, and reach a resolution
12 on the comments. Typically referred to as "comment
13 resolution meetings".

14 It's quite normal in the industry that
15 that is the process and I'm sure that's -- I'm sure
16 as I can be with the ten years that have lapsed --
17 but that is likely the process that took place in
18 Ottawa.

19 KATE McGRANN: Other than the advice
20 provided to the redundant elevators in the station,
21 do you remember any other suggestions or advice STV
22 provided to the City, that the City opted not to
23 follow?

24 KEITH MacKENZIE: No.

25 KATE McGRANN: Were there any

1 discussions at any point during your time on the
2 project about increasing the City's budget for the
3 project? What could potentially come from that
4 kind of a change?

5 KEITH MacKENZIE: I don't have any
6 specific recollection of a discussion that would
7 have increased the budget.

8 KATE McGRANN: What was your
9 understanding about the finality of the budget?
10 How set in stone it was? Was it a goal post; was
11 it an absolute rule?

12 KEITH MacKENZIE: It was fairly firm.
13 It was certainly the City's prerogative not to
14 proceed if the bids came in over the budget. But
15 it was never stated that there would not be a
16 project if the bids came in over the budget.

17 KATE McGRANN: Were you involved in the
18 preparation of the documents that formed the RFP?

19 KEITH MacKENZIE: Yes.

20 KATE McGRANN: As part of that work,
21 were you involved in any discussions about the
22 likelihood that some or all of the bids would come
23 in over the budget or the affordability envelope
24 set out in the RFP?

25 KEITH MacKENZIE: Yes.

1 KATE McGRANN: What can you tell me
2 about those discussions, starting with was it one
3 discussion? Was it a series of discussions over a
4 period of time?

5 KEITH MacKENZIE: It was a series of
6 discussions over time.

7 KATE McGRANN: To the best that you
8 can, can you describe the timeframe on which those
9 discussions took place?

10 KEITH MacKENZIE: To the best of my
11 recollection, it would have been perhaps a
12 four-month period.

13 KATE McGRANN: Who else was involved in
14 those discussions?

15 KEITH MacKENZIE: There was a financial
16 team that the City had hired; I think it was
17 Deloitte if I'm recalling correctly.

18 There was also a legal team. I don't
19 remember the name of the legal firm. But both of
20 those entities along with the senior managers from
21 the City's Rail Implementation Office and myself
22 had discussions on how to structure that RFP to
23 encourage bidders to provide the best value to the
24 City.

25 KATE McGRANN: Were representatives

1 from Infrastructure Ontario involved in those
2 discussions at all?

3 KEITH MacKENZIE: Yes, I'm sure they
4 were.

5 KATE McGRANN: And I'm saying this
6 because you referenced the City's legal
7 representatives.

8 In the questions that I asked you about
9 the approach taken to incentivizing the bidders to
10 give the best value to the City and things like
11 that, I am not asking you to share with me any
12 legal advice sought by the City, or any legal
13 advice provided to the City.

14 So I'm not looking for any
15 solicitor-client privileged information here.

16 How was the RFP designed or what steps
17 were taken in the RFP to the bidders to provide the
18 best value to the City?

19 KEITH MacKENZIE: I don't think I can
20 give you a very precise answer. It was a
21 discussion that took place over many months. And
22 the strategies on how to incentivize bidders to
23 give the best value to the City were discussed on
24 multiple occasions, with many different
25 participants.

1 And as you could imagine through such
2 discussions, plans evolve and are developed,
3 modified, and it's kind of a process that takes
4 place over time and it's -- until we get to a point
5 where everyone agrees that it is an appropriate
6 structure and the best structure for the City.

7 KATE McGRANN: And what can you tell me
8 about the structure that was arrived at?

9 KEITH MacKENZIE: I'll tell you what I
10 recall. I have not reviewed any specific documents
11 relative to that, relative to the RFP in over, you
12 know, nine years ago, I think it was.

13 But my recollection was that there was
14 an affordability gate or cap that the City was
15 trying to achieve. And, again, I'm not sure of the
16 exact number, but let's use 2.1 billion. It's
17 likely that number, something close to it.

18 The bidders that were below that value,
19 whatever that value was, were looked at more
20 favourably, if you were the only bidder for
21 example, who was underneath that threshold or that
22 gate, I believe you automatically became the
23 preferred proponent, presuming that you still
24 passed the technical evaluation.

25 And if two bidders or three bidders

1 were underneath that threshold then the evaluation
2 criteria was geared in a certain way. Similarly,
3 if all three bidders were over the threshold their
4 evaluations would take place.

5 There was kind of that gate, that if
6 you were below that number, you were in a separate
7 pool than someone who might be slightly above that
8 number.

9 Really, that's all the details that I
10 recall on that. But there was lots of discussions
11 on the nuances of how that should be written, could
12 be written, that took place over, you know, several
13 months.

14 KATE McGRANN: Do you recall whether
15 there was any discussion about whether that kind of
16 gated approach may also incent a kind of
17 unrealistic optimism to bidders, and might
18 encourage bidders to put forward a bid that isn't
19 realistically achievable at the end of the day in
20 order to make it into the pool of those below the
21 affordability cap, with all the benefits that come
22 with meeting that threshold?

23 KEITH MacKENZIE: I think the thought
24 by the team was that these were very sophisticated
25 bidders, and they would bid appropriately to their

1 solutions and their cost.

2 KATE McGRANN: Was the idea that that
3 risk might be seen as a significant one?

4 KEITH MacKENZIE: I'm unclear on what
5 risk you're referring to?

6 KATE McGRANN: The risk that the
7 bidders would be overly optimistic in their bids
8 with respect to the affordability cap, motivated in
9 part by an effort to make it on so they will be
10 considered, and a bid that is realistically
11 achievable because of the way that the RFP was set
12 up?

13 KEITH MacKENZIE: I don't think I can
14 speak to the mindset of the bidders.

15 KATE McGRANN: I'm not asking you to
16 speak to the mindset of the bidders. I'm asking
17 you to tell me if there was any consideration of
18 whether that was a risk with the approach that was
19 taken to the way the affordability cap was
20 positioned in the RFP.

21 KEITH MacKENZIE: I don't believe that
22 was considered as a viable risk.

23 KATE MC GRANN: And the reason for that
24 is the bid for sophisticated actors and it wasn't
25 that they would --

1 -- Reporter's Note: (Experienced
2 virtual connection difficulties).

3 -- OFF THE RECORD DISCUSSION --

4 -- RECESS TAKEN 10:24 A.M. --

5 -- UPON RESUMING AT 10:35 A.M. --

6 KATE MCGRANN: Before the break I had
7 been asking you about what if any consideration was
8 had by STV and those you were working with at the
9 City and otherwise about whether the approach taken
10 to the affordability cap might result in a
11 situation where bidders overreach in terms of what
12 they promise versus what they can actually deliver.

13 And I think that your answer was that
14 that was not seen as a viable risk, because of the
15 sophistication of the bidders that you anticipated
16 responding to the RFP; is that fair?

17 KEITH MacKENZIE: Yes.

18 KATE McGRANN: Was there any
19 consideration of potential optimism bias on the
20 parts of the bidders more generally in preparing
21 the responses by STV, the City and others working
22 on the RFP?

23 MICHAEL O'BRIEN: Ms. McGrann, I know
24 that you said that you're not asking Mr. MacKenzie
25 about any legal advice provided by counsel to the

1 City. And I just do want to note that there's a
2 little bit of an awkward situation in that if there
3 is any privilege that's touched on by these
4 questions, it's not STV's privilege to assert.

5 So I wouldn't necessarily be in a
6 position to be able to assert that privilege. I
7 just want to state that.

8 And I recognize that you have already
9 advised Mr. MacKenzie that he shouldn't be -- or
10 that you're not asking him about advice and
11 discussions with the lawyers that were part of
12 those meetings.

13 But it is in a certain sense difficult
14 to separate, or it may be difficult to separate the
15 participation of lawyers in some of those
16 discussions.

17 KATE McGRANN: Okay. And what would
18 you like me to take from that, Mr. O'Brien?

19 MICHAEL O'BRIEN: Well, I think that,
20 you know, I think that the questions can proceed.
21 I wanted to state that for the record, the City may
22 take a position with respect to these questions at
23 a certain point.

24 The City is not here today, so I can't
25 take that position. And I'm not speaking on the

1 City's behalf; I'm not suggesting that I am.

2 KATE McGRANN: Okay. Mr. MacKenzie,
3 are you able to answer the question that I asked?

4 KEITH MacKENZIE: I believe I am, but
5 if you could repeat it, it's been a while since you
6 stated the first question, so if you can try to
7 repeat it for me, thank you.

8 KATE McGRANN: Was there any
9 consideration had by STV and those you were working
10 with, the City, of the potential implications of
11 optimism bias on the part of the bidders and how
12 that may be accounted for in the RFP?

13 KEITH MacKENZIE: No.

14 KATE McGRANN: Do you know if there was
15 any use of reference class forecasting in the work
16 that was being done to put together the RFP to
17 understand what the bids might look like?

18 KEITH MacKENZIE: I'm not familiar with
19 the terminology that you used, the referenced
20 forecasting.

21 KATE McGRANN: Do you know if STV or
22 anybody else who was working with or for the City
23 took a look at similar projects already in
24 existence to understand risks, costs, potential
25 upsides and downsides and how to incorporate that

1 information to better the City's RFP?

2 KEITH MacKENZIE: My recollection is,
3 yes. We had spoken previously about cost
4 estimating, so that would certainly be part of it.

5 And the cost estimates are based to
6 some degree on similar projects, prices that had
7 been made available in order to develop the cost
8 estimate.

9 There was also an effort to understand
10 the longer term cost, the maintenance costs,
11 because that was certainly part of the bid.
12 Although it was not part of the threshold or
13 gateway that we were referencing earlier.

14 But there was some studies taken to try
15 to best understand what the maintenance costs might
16 be.

17 Also, there was considerations for
18 perhaps bidders trying to manipulate the bids in a
19 way that some of the capital costs or construction
20 costs might be placed into the maintenance costs,
21 as a way to stay underneath the threshold.

22 So that was part of the work that was
23 undertaken in the framework that went into the
24 gateway discussions and the general discussions in
25 how the RFP might be structured.

1 KATE McGRANN: Do you remember what
2 reference projects were looked into?

3 KEITH MacKENZIE: I don't. I think
4 there were professional organizations, and again
5 the names escape me, but that publish, particularly
6 on the operations and maintenance costs, that
7 publish data from agencies on what their operations
8 or maintenance costs might have been over a period
9 of time.

10 And that information is available, and
11 frequently shared. So I know that we did go to
12 that type of resources to get an understanding on
13 what the long-term maintenance cost might be.

14 KATE McGRANN: Did you look to, or did
15 anybody who was working for with the City on this
16 project, look to referenced projects to assess the
17 reasonableness of the milestones and deadlines that
18 are set out in the project agreement?

19 KEITH MacKENZIE: I want to make sure I
20 understand the question. And I believe what you're
21 asking is, did we look towards other projects in
22 establishing and setting the milestones? Was that
23 your question?

24 KATE McGRANN: Yes.

25 KEITH MacKENZIE: I think my answer is

1 going to be a little bit mixed; it would be yes,
2 and no.

3 Certainly we have an understanding of
4 the time that's associated with testing and
5 commissioning. And that is from experience, in
6 some cases firsthand experience that some of our
7 employees had with working with or working for
8 other agencies.

9 So when we're looking at some
10 milestones prior to revenue service, the durations
11 that are desirable and anticipated for testing and
12 commissioning and training, would certainly be
13 based on previous experience with other projects.

14 In some cases where we are constructing
15 something unique, like a tunnel, it would not be
16 based on other projects. It would be based on
17 anticipated production rates of construction.

18 So the answer is both yes, and no,
19 depending on the elements and the milestones.

20 KATE McGRANN: With respect to the
21 testing and the commissioning piece, I think that's
22 an example you gave of an area where you could look
23 at reference projects and in some cases STV's own
24 experience to inform those timelines.

25 We see, for example, that there was a

1 requirement of 12 days of continuous service before
2 revenue service availability; are you familiar with
3 that, the 12 days?

4 KEITH MacKENZIE: Yes.

5 KATE McGRANN: Were you involved in the
6 selection of the 12 days as the requirement?

7 KEITH MacKENZIE: Indirectly.

8 KATE McGRANN: Okay. Can you help us
9 understand how the 12 days was selected as the
10 right requirement there?

11 KEITH MacKENZIE: The objective of the
12 City going into revenue service and of the contract
13 is that we have a high degree of reliability when
14 we open for revenue service.

15 So that once revenue service starts, it
16 can continue uninterrupted.

17 One way to do that is to run service
18 and, I'll call it shadow service, run a full
19 schedule, so whatever your anticipated start times
20 are in a number of trains and everything else, you
21 would mimic that for a period of 12 days. In its
22 full scope.

23 That would require operators,
24 maintainers, people unlocking stations in the
25 morning, everything that's associated with that,

1 the operations control centre, but every aspect of
2 running service would be replicated over a period
3 of time.

4 You can imagine, you know, one day,
5 okay, you had a good day; 2 or 3 days maybe you
6 have a good day. A week, okay.

7 But I think 12 days was anticipated to
8 represent a sufficient amount of time that any
9 problems that might develop in that initial
10 opening, you know, the training of the staff,
11 training of the operators, training of the
12 maintainers, a failure of something that was
13 constructed.

14 The system has overhead catenary wires,
15 for example, that there would be enough repetition
16 of service that if there was something that wasn't
17 quite right it might surface within those 12 days.

18 So now those 12 days are on top of
19 months of preparatory testing and commissioning,
20 leading up to that period of time.

21 So the premise is that 12 days, plus
22 all the months that had occurred previously for
23 testing and commissioning, that the system should
24 have a higher degree of reliability than if you
25 just, said, hey, I think we're done, let's run

1 trains. Without having that burn-in period.

2 Sometimes systems suffer from what is
3 called "infant mortality". Problems that show
4 themselves early in the life of an new transit
5 system. And the idea that the 12 days continuous
6 services, that you're eliminating a high number of
7 those. Kind of like sea trials for a ship.

8 KATE McGRANN: A couple of questions
9 about that. Do you know where this specific number
10 of 12 days came from? Was it taken from a project
11 where it's been successful elsewhere; or how is
12 that number arrived at?

13 KEITH MacKENZIE: I don't have a
14 recollection on that.

15 KATE McGRANN: And with respect to
16 shadow service, this may be a silly question, but
17 bear with me. In addition to going through all of
18 the motions that you described and acting as if
19 this is a full service day, people are opening the
20 stations, every station that has a person at it
21 would have a person there, etcetera, etcetera.

22 Do you also require riders to mimic the
23 ridership and the behaviour of what the ridership
24 is expected to be; is that part of shadow service?

25 KEITH MacKENZIE: The riding public

1 would not be on those trains. So riders, no. I
2 know there was some, or there was anticipated --
3 again, I wasn't there when they were actually doing
4 the test. I left prior to revenue service.

5 But I believe that at some point, I
6 don't know if it was during these 12 days or not,
7 but the vehicles are loaded with weights to mimic a
8 certain amount of weights that the vehicles have to
9 perform under.

10 And, you know, acceleration and
11 braking, braking distances and those things are
12 tested; I think that's part of the vehicle testing.
13 Whether that's continued out in the 12 days, I'm
14 uncertain.

15 But we don't actually put people --
16 particularly the riding public in that
17 circumstance, because the trains are not yet fully
18 tested and that wouldn't -- that's not something
19 that would be done.

20 But I believe there were sandbags or
21 something like that, at some point, placed on the
22 train so that they could be tested under load.

23 KATE McGRANN: I think you used the
24 phrase "burn-in period". Did you use that phrase?

25 KEITH MacKENZIE: I might have, it is a

1 phrase I'm familiar with.

2 KATE McGRANN: Can you help me
3 understand what that phrase means?

4 KEITH MacKENZIE: Yes. I believe its
5 origin is in the combustion engine. You may be
6 familiar with, particularly in older model cars,
7 not so much with the modern designs.

8 But it used to be that you had to drive
9 your car very gently in the first 500 miles or so.
10 That is so those mechanical parts can wear into the
11 proper fitting on how it's going to run for the
12 next 150,000 miles.

13 And that is typically what's referred
14 to as a burn-in period. Vehicles are similar.
15 It's a mechanical creation that you want to put it
16 through that testing period or burn-in period in
17 order to make sure that the parts are all working
18 properly.

19 And when they're assembled, of course
20 they're tested, but they're only tested -- maybe
21 they're tested a dozen times to make sure the doors
22 open, are working well.

23 When you put it in service that's going
24 to do that hundreds of times a day. And in variant
25 circumstances. Sometimes it will have ice and

1 snow, and water and people.

2 It's really that type of burn-in period
3 that you're trying to make sure that the mechanics
4 of the vehicle are working as intended.

5 KATE McGRANN: And so in this instance,
6 with Stage 1 of the OLRT, based on the way that the
7 project agreement was put together and things like
8 that, was it your understanding that the burn-in
9 period was to be accounted for before revenue
10 service availability?

11 KEITH MacKENZIE: Absolutely.

12 KATE McGRANN: Just while we're on this
13 kind of area. Here on your time on the project, do
14 you remember any discussions of I'm going to say a
15 soft start then I'll tell you what I think that
16 means, and you can tell me if those two things line
17 up.

18 Do you remember any discussion of post
19 revenue service availability, opening the system up
20 to public service at less than full capacity.

21 So examples of that would be running
22 fewer than the required number of trains, running
23 at reduced hours, leaving hours at the beginning
24 and end of the day without service, anything less
25 than full capacity to allow for additional review

1 testing, de-bugging, etcetera?

2 KEITH MacKENZIE: Not in the period
3 that I was there.

4 KATE McGRANN: Were you involved in any
5 discussions about what the start to public service
6 on Stage 1 would be when it opened to the public?

7 KEITH MacKENZIE: My recollection is
8 that for the period that I was there, again up
9 until 2003, was that the expectation was, it would
10 start at full service.

11 KATE McGRANN: You said 2003, but I
12 think you mean 2013?

13 KEITH MacKENZIE: 2013, yeah, yeah.
14 It would be full revenue service as
15 planned.

16 KATE McGRANN: Was STV's user advice
17 sought on that mode of opening?

18 KEITH MacKENZIE: That "mode of
19 opening" being a soft start?

20 KATE McGRANN: Well, a soft start or
21 right out of the gates, full service?

22 KEITH MacKENZIE: The plan was, again
23 when I was there, was that we would start at
24 revenue service, at planned revenue service.

25 I don't recall any discussions about a

1 soft start. The intent of testing and
2 commissioning, and the consecutive days of service
3 without interruptions was all part of the plan so
4 that you had reliability when you went into revenue
5 service.

6 KATE McGRANN: Okay. So the 12 days of
7 testing that we were talking about, the idea was
8 you don't get to leave that exercise until you have
9 achieved 12 consecutive days of service with no
10 issues; is that the idea?

11 KEITH MacKENZIE: Yes. Now I'll just
12 correct your statement. The 12 days of testing.
13 The testing really should be completed prior to
14 those 12 days. It's the 12 days is more of a
15 demonstration period, rather than a testing.

16 KATE McGRANN: So you don't get to exit
17 the 12-day demonstration period until you have
18 completed 12 days of consecutive problem-free
19 demonstration?

20 KEITH MacKENZIE: That is my
21 recollection of what the intent was with the
22 project period.

23 KATE McGRANN: What would happen if you
24 got to, you know, day 5 or day 11 and you ran into
25 an issue?

1 KEITH MacKENZIE: I believe our intent
2 was that we would start over again.

3 KATE McGRANN: So you're back at the
4 beginning of day one again and you...

5 KEITH MacKENZIE: (Witness nods.)

6 KATE McGRANN: Okay. I understand that
7 the consortia that was selected included Alstom as
8 vehicle supplier and Thales as the supplier of the
9 control systems, so the onboard signalling systems
10 and things like that. Do I have that right?

11 KEITH MacKENZIE: I believe you do.

12 KATE McGRANN: Was there any
13 consideration -- let me start that question all
14 over again.

15 The PSOS allowed for different vehicle
16 supplier and signalling system supplier, correct?

17 KEITH MacKENZIE: Correct.

18 KATE McGRANN: Was there any
19 consideration of the implications of allowing for
20 that kind of division as between the vehicle and
21 the signalling system when the PSOS is being put
22 together?

23 KEITH MacKENZIE: That arrangement is
24 quite normal.

25 KATE McGRANN: Okay. Was there any

1 consideration of the implications of allowing for
2 that to happen, normal or not, when the PSOS is
3 being put together?

4 KEITH MacKENZIE: I believe, yes, is
5 the answer. Because there are testing and
6 commissioning requirements to demonstrate that
7 those systems have been properly integrated.

8 Systems integration is a term that's
9 well-known in that area of this type of project.
10 The signalling system and the train have to be
11 integrated.

12 There are certain conditions where the
13 train would go into emergency braking, for example,
14 and that's based on the coordination of the signal
15 system of the train. So the testing and the
16 commissioning and the demonstration of proper
17 systems integration is a requirement, based on the
18 fact that you have a vehicle, and most likely, as
19 is almost always the case, a different organization
20 that's providing the train control.

21 KATE McGRANN: I think I know the
22 answer to my next question based on what you said,
23 but I'll ask it anyways.

24 Was there any consideration given to
25 requiring the train and signalling system be

1 provided by the same supplier?

2 KEITH MacKENZIE: No, not to my
3 recollection.

4 KATE McGRANN: Was there any preference
5 expressed by the City or anybody working for the
6 City for a particular signalling systems provider?

7 KEITH MacKENZIE: I don't believe so.

8 KATE McGRANN: Was there any -- was a
9 specific model of signalling system used as a basis
10 from which to build the PSOS?

11 KEITH MacKENZIE: To the best of my
12 recollection, it was a communication-based train
13 control system. Which is a particular type of
14 train control. I believe we provided that
15 specificity in the PSOS.

16 KATE McGRANN: And why was that
17 particular type of train control selected?

18 KEITH MacKENZIE: It allows more
19 precise positioning and control of trains relative
20 to each other and relative to the infrastructure
21 than other systems.

22 KATE McGRANN: And why was that
23 important for the Ottawa Stage 1 LRT?

24 KEITH MacKENZIE: It's part of the
25 overall solution to provide the capacity on the

1 line of that 18,000 people per hour.

2 KATE McGRANN: Can you help me
3 understand that?

4 KEITH MacKENZIE: I can. In order to
5 achieve that capacity, you need a train that can
6 carry so many people. And I'll just use simple
7 numbers to keep it simple.

8 If you would imagine you had a train
9 that could carry a thousand people, you would need
10 18 trains in an hour in order to carry 18,000
11 people per direction per hour.

12 If you have a train that carries 500
13 people, you're going to need twice as many. And
14 the more trains that you have in service, in order
15 to try to move the people, you need them to be
16 closer together. And in order to do that safely,
17 you need a train control system that can manage
18 that spacing safely.

19 Some of the older systems restrict
20 trains from entering a certain zone if there's
21 another train in that area. Whether they're in the
22 beginning or the end of that track cycle.

23 Whereas, the communication-based train
24 control system knows where the train is that's in
25 front of you or behind you, and will allow the

1 trains to get closer together, because they can be
2 more precisely located.

3 So it's really one of the best types of
4 train control that you can have for high capacity
5 lines.

6 KATE McGRANN: We talked earlier about
7 the PSOS, and I'm just wondering, in terms of
8 levels of specificity, does specifying this
9 particular system, for example, limit the number of
10 signalling system suppliers who may be able to
11 provide what the PSOS has asked for?

12 KEITH MacKENZIE: Again, this is a
13 little bit outside of my area of expertise. So I
14 think I'm going to not answer the question, because
15 I would not be able to give a very accurate -- it
16 would be almost a guess on my part.

17 KATE McGRANN: Okay. We definitely
18 don't want you to guess, so thanks for identifying
19 that.

20 The concept report industry review work
21 that we talked about earlier that was done with
22 respect to the vehicle; do you know if a similar
23 exercise was done with respect to the signalling
24 system?

25 KEITH MacKENZIE: I don't know. I

1 don't recall.

2 KATE McGRANN: You mentioned that there
3 were some changes in alignment that took place
4 during the time that you were working on the
5 project, both with respect to stations and the
6 tunnel, I think; is that right?

7 KEITH MacKENZIE: That's correct.

8 KATE McGRANN: Do you know if the speed
9 requirements were examined as against the alignment
10 that was finally selected and the route between
11 stations that resulted, to determine whether the
12 speed requirement was viable throughout the system
13 as planned?

14 KEITH MacKENZIE: The speed
15 requirements were more about the future expansion
16 than they were the initial service.

17 KATE McGRANN: What was your
18 understanding about the speed requirements for
19 initial service?

20 KEITH MacKENZIE: Can I answer the
21 question that you asked? The speed requirements
22 were again, about the potential for future
23 expansions. And by the requirements, what I'm
24 hearing is that you're referring to the
25 requirements that the trains operate or have the

1 ability to operate at a certain speed.

2 And that requirement, again, was the
3 City's desire to preserve their ability to run
4 longer distances in the future. So that
5 requirement is not related to the initial alignment
6 or the locations of the stations.

7 KATE McGRANN: Okay. Was there -- let
8 me make sure I understand this correctly. Thanks
9 for your patience.

10 So the 100 kilometer an hour
11 requirement is really there to service potential
12 future expansions when the stations are farther
13 apart than what is planned for Stage 1; is that
14 right?

15 KEITH MackENZIE: That is correct.

16 KATE McGRANN: There wasn't an
17 expectation that the trains would be achieving
18 speeds of 100 kilometers per hour between the Stage
19 1 stations in daily operation?

20 KEITH MackENZIE: I think that's
21 correct. There are some stations, I believe, on
22 the eastern end of the alignment that are spaced a
23 little bit farther apart. I'm not sure if they
24 would -- if they're far enough to allow the train
25 to accelerate to reach those speeds, or if there

1 were other civil constraints like curvatures or
2 something else that might restrict that.

3 But I believe, I don't believe we're
4 reaching 100 kilometers per hour on Stage 1
5 anywhere along the track.

6 KATE McGRANN: Okay. If you can't
7 speak to this, please just tell me. But I'm trying
8 to understand and using what I'm sure is a poor
9 analogy, but are there speed limits that apply when
10 you're driving the train between one station and
11 the next?

12 Is there a top speed that the trains
13 would be expected to reach as they're moving
14 between stations in Stage 1?

15 KEITH MacKENZIE: Yes.

16 KATE McGRANN: Okay. And were those
17 determined at the time of the formation of the
18 PSOS?

19 KEITH MacKENZIE: I don't believe that
20 the speed restrictions were specified in the PSOS.
21 Because it is a combination of the solutions that
22 would have been brought forward by the bidders,
23 both on the vehicle and the train control systems.

24 The marriage of those two solutions,
25 along with the civil geometries, would dictate what

1 those would be.

2 KATE McGRANN: And so where would those
3 speed limits and conversely those speed
4 requirements be set out? How would they be
5 determined?

6 For example, is that something that
7 comes about through meetings with proponents in the
8 midst, you know, before they submit their final
9 bids?

10 Is that something that comes about in
11 project agreement negotiations after a preferred
12 proponent has been selected? How is that worked
13 out?

14 KEITH MacKENZIE: It's through the
15 final design and the integration of the train
16 control system of the vehicle and the civil
17 infrastructure that's being finally designed.

18 There's certainly expectations, as you
19 would imagine, a train approaching a station would
20 be required to reduce speed as it approaches. You
21 wouldn't, just to use an analogy, come screaming
22 into the station at 100 kilometers an hour and slam
23 on the brake in a skidding stop. That's not very
24 comfortable for the passengers, nor is it --

25 KATE McGRANN: And for anybody in the

1 front of the train, yeah.

2 KEITH MacKENZIE: Yeah, nor is it safe.

3 So there's certain expectations that
4 the trains will decelerate at a reasonable rate of
5 speed. And there may have been restrictions on
6 that. That's not unusual, in order to protect
7 passenger comfort.

8 Also, just safe operations of the
9 trains. So those speed restrictions, the final
10 restrictions that are in the train control system
11 that speak to the train, that actually limits how
12 fast the train goes or how slow the train goes, is
13 all finalized in the final design.

14 There's certainly expectations from the
15 designers on what is realistic. And we would have
16 been working with some parameters, you know, in the
17 design in order to develop anticipated, you know,
18 schedules, for example.

19 But until we know, again, we didn't
20 pick the vehicle, we didn't pick how many people
21 would fit on a vehicle, we didn't pick the specific
22 train control systems. So all those elements have
23 to come together in order to define what those
24 speed restrictions would be.

25 KATE McGRANN: Okay. So when you're

1 talking about final design, you're not talking
2 about the final reference concept design that STV
3 was putting together --

4 KEITH MacKENZIE: No.

5 KATE McGRANN: -- you're talking about
6 the final design that's prepared by the proponents
7 as part of their response to the RFP?

8 KEITH MacKENZIE: Yes.

9 KATE McGRANN: I'm going to jump around
10 here a little bit by topic, so just bear with me.

11 With respect to the selection of the
12 delivery model the design-build-finance-maintain
13 model, was STV involved in the consideration of
14 different potential delivery models and the
15 ultimate decision to proceed by way of DBFM?

16 KEITH MacKENZIE: My recollection is
17 that decision was primarily led by the City and IO.
18 The City decided that they would keep operations
19 and they did not want to keep the responsibility
20 for maintenance. So it was a design-build-maintain
21 model.

22 And the financing aspect, again, was
23 something that was worked out with their financial
24 advisors and, you know, folks at the City who
25 understand how much money the City has to spend.

1 KATE McGRANN: Okay. And I think you
2 said that when you began, it wasn't clear whether
3 it was going to be a design-build,
4 design-build-maintain,
5 design-build-finance-maintain; did STV have any
6 involvement in providing advice to the City on
7 which of those models might be favourable or
8 anything like that?

9 KEITH MacKENZIE: Again, I think the
10 decision was primarily between the City and IO.

11 KATE McGRANN: Okay. So I understand
12 that the decisions were there, but did STV provide
13 any advice or input into those decisions?

14 KEITH MacKENZIE: I don't think so.

15 KATE McGRANN: Did STV have any
16 involvement in determining the criteria or the
17 requirements for the testing and commissioning of
18 the vehicles?

19 KEITH MacKENZIE: Yes.

20 KATE McGRANN: And what did that
21 involvement look like?

22 KEITH MacKENZIE: Recommendations for
23 duration of testing, training of operators, very
24 likely the 12 days of running service without
25 interruptions. Again, based on experience that

1 staff had had either as an operator of an agency or
2 as consultants to an agency that's going into
3 revenue service.

4 KATE McGRANN: With respect to the
5 training of operators, do you recall whether there
6 was any discussion about bringing in an experienced
7 operator to be on site for the beginning portion of
8 public service to act as a resource, etcetera, for
9 the City's operators?

10 KEITH MacKENZIE: I know there was
11 discussions about having someone who had been
12 trained that would then become the trainer.
13 Whether that was through previous experience, or
14 whether that was just through extensive training, I
15 don't recall.

16 KATE McGRANN: Just so I understand
17 what this looks like.

18 Who would be training this person who
19 would then become the trainer?

20 KEITH MacKENZIE: I don't have a
21 recollection on that.

22 KATE McGRANN: Okay. Other than that,
23 do you recall any discussions about any other
24 resources or supports that could have been put in
25 place for the City as it takes on operations of its

1 LRT system for the first time?

2 KEITH MacKENZIE: Not during the time
3 that I was involved in the project.

4 KATE McGRANN: Did you have any
5 involvement in assessing the responses to either
6 the RFQ or the RFP?

7 KEITH MacKENZIE: Yes.

8 KATE McGRANN: What was your role?

9 KEITH MacKENZIE: Technical evaluation.

10 KATE McGRANN: Technical evaluation?

11 KEITH MacKENZIE: Yes.

12 KATE McGRANN: And what did that
13 entail?

14 KEITH MacKENZIE: There were
15 requirements, certainly in the RFP, and likely in
16 the RFQ, for the proponents to demonstrate their
17 knowledge and experience in meeting the technical
18 requirements of the contract.

19 And certainly in the RFP, I don't have
20 a clear memory of the RFQ, but certainly in the RFP
21 there was portions of the bid that we reviewed and
22 scored, based on the proponents' responses.

23 KATE McGRANN: Okay. Do you recall who
24 else served in that function?

25 KEITH MacKENZIE: I have a recollection

1 of one other individual who was my deputy, Charles
2 Wheeler. He worked at AECOM at the time.

3 KATE McGRANN: Would the two of you
4 have been part of a larger group of individuals who
5 were engaging in the technical evaluation?

6 KEITH MacKENZIE: Yes, I think there
7 might have been five of us. But I remember Charles
8 and I were certainly part of the team. We were
9 basically the number 1 and 2 guys on the -- for
10 CTP.

11 KATE McGRANN: Okay. Based on what you
12 saw, was it any surprise to you that RTG was
13 selected as the successful proponent?

14 KEITH MacKENZIE: No.

15 KATE McGRANN: I understand that
16 Capital Transit Partners' involvement in the
17 project continued after your departure in 2013 and
18 that included a project management role throughout
19 the construction phase.

20 Are you able to speak to STV's
21 involvement through the next stage of the project
22 based on what you knew at the time that you left?
23 Can you tell me what was envisioned for STV as a
24 project manager?

25 KEITH MacKENZIE: I can try.

1 KATE McGRANN: Please do.

2 KEITH MacKENZIE: I'll try to be brief.
3 But our role went from during the design we were
4 managing, I think at one point we had up to 200
5 engineers involved in the project.

6 After the bids were awarded, obviously
7 we're no longer doing design. That's up to the
8 design-builder now. But there were reviews that
9 were being done of those designs by the
10 design-builders.

11 Capital Transit Partners and STV would
12 sometimes review those advances in the designer
13 submissions and primarily along the lines of the
14 work that I had described previously the tunnel
15 work, the station work, the maintenance facility,
16 wherever that responsibility lied.

17 However, our role with the City changed
18 significantly during the design, final design
19 portion and construction.

20 The City supported that effort to the
21 largest extent. So previously we had maybe 200
22 engineers working on it and the City probably had
23 25. Those 25 people stayed on board, and CTP's
24 involvement on a day-to-day basis dropped down to,
25 I don't know, maybe 3 or 4, maybe ten.

1 But the project was staffed primarily
2 by City and the resources that the City had at
3 hand. We were primarily there on an as-needed
4 basis.

5 And were called on to look at things
6 that perhaps exceeded the technical expertise of
7 the staff they had available to them. If the City
8 felt that they had the staff to review the
9 submissions they would review them themselves.

10 So CTP's role during the design and
11 construction was greatly reduced and the City took
12 over the primary responsibilities of reviewing and
13 enforcing PSOS.

14 KATE MC GRANN: Based on what you saw
15 during your time there, did the City have the
16 expertise required to take that role on?

17 KEITH MacKENZIE: To the largest
18 extent, yes. And, again, they reached out to us
19 when they felt that they did not have that
20 expertise.

21 KATE McGRANN: Did the City have the
22 expertise required to determine when it needed to
23 reach out for help? Like, would it be able to
24 identify when an issue exceeded its expertise and
25 required external assistance?

1 KEITH MacKENZIE: I believe they did.

2 KATE McGRANN: So I'm looking at my
3 questions. I'll pause and ask my colleague.

4 Ms. Murynka, do you have any follow up
5 questions based on what we've discussed so far?

6 DANIELLA MURYNKA: I do have just a
7 couple of questions, thank you.

8 You've indicated, sir, that STV did
9 not, to your recollection, provide advice or
10 recommendations in respect of the selection of the
11 delivery model.

12 Do you recall whether STV supported the
13 delivery model that was chosen?

14 KEITH MacKENZIE: We had no basis to
15 object to the delivery model.

16 DANIELLA MURYNKA: You indicated, sir,
17 that on your early work in respect of cost
18 estimations it was slightly over the budget, maybe
19 within a hundred million dollars or so, or some
20 multiple of that.

21 What was the import of this overage?
22 Was it communicated to the City at all? Did it
23 have any effect on the work you were doing, or was
24 it within such a range, for example, that it had no
25 import?

1 KEITH MacKENZIE: So the cost estimates
2 were given to the City. The importance of that was
3 to make sure that we did not let the scope of the
4 project grow, and to stay focused on one of the
5 objectives of delivering the project on budget.

6 DANIELLA MURYNKA: Do you recall any
7 particular response from the City upon the City's
8 learning that the cost estimates exceeded the
9 budget?

10 KEITH MacKENZIE: I don't have a
11 specific recollection, but I would expect that they
12 asked us to look for areas to reduce costs.

13 And as I explained later, we did take
14 on a value engineering exercise in order to achieve
15 that.

16 DANIELLA MURYNKA: You said, sir, with
17 respect to when you were being asked questions with
18 respect to reference projects related to the
19 reasonableness of milestones and deadlines, your
20 evidence was, I'll just, you know, summarize that.
21 Sometimes you did refer to reference projects and
22 other times you did not.

23 For example, in the construction of
24 unique things like a tunnel, it would not be based
25 on other projects; but, as you say, anticipated

1 rates of construction.

2 How were anticipated rates of
3 construction known or determined?

4 KEITH MacKENZIE: The team that we had
5 working on the tunnel, in this particular example,
6 had the expertise to be able to make those
7 predictions.

8 DANIELLA MURYNKA: Would that be based
9 on, for example, past experience?

10 KEITH MacKENZIE: That would be based
11 on past experience, but more importantly, I think,
12 industry expectations for equipment and manpower.

13 DANIELLA MURYNKA: And my last question --
14 thank you for that.

15 My last question is, you were
16 questioned about the 12-day demonstration period,
17 as you put it. And you were asked, for example, if
18 an issue occurred on day 11; what would happen?

19 And your evidence was that you believed
20 it was the intent that the 12-day period would
21 start again.

22 My question in connection with that
23 matter is this: What would count as an issue? Was
24 there a threshold for the type of problem that
25 would restart the clock? Or how would you -- does

1 that question make sense?

2 KEITH MacKENZIE: It does. I don't
3 have a direct recollection of what is in the
4 contract in regards to that. But I would
5 anticipate it to be anything that would disrupt the
6 ability to keep schedule.

7 So the trains are scheduled to arrive
8 and depart at certain times within some variations,
9 but it's really total trip times or -- sorry, total
10 number of trips.

11 So if a train was not able to complete
12 the number of trips that it was scheduled to occur
13 for that day, that would be an issue.

14 I would say that the schedule and
15 trains were able to recover from, and still the
16 train made the same number of trips throughout the
17 day, I don't believe that that would have been
18 cause for restarting the clock.

19 DANIELLA MURYNKA: Thank you, those are
20 my follow-up questions.

21 KATE McGRANN: A couple of questions on
22 the approach to the geotechnical risk on this
23 project. First of all, was STV involved at all in
24 trying to quantify the geotechnical risk?

25 KEITH MacKENZIE: STV was not

1 associated with trying to quantify the geotechnical
2 risks.

3 KATE McGRANN: Was one of the other
4 joint venture partners involved in that exercise?

5 KEITH MacKENZIE: I believe they were.

6 KATE McGRANN: Do you know which of the
7 partners that would have been?

8 KEITH MacKENZIE: It was likely between
9 AECOM and Jacobs McMillen.

10 KATE McGRANN: If you can't answer this
11 question you'll let me know. But the project
12 agreement involved a complete assumption of the
13 geotechnical risks, subject to certain limitations,
14 by the private partner.

15 Do you know if that approach was common
16 in the industry at the time that the project
17 agreement was negotiated and signed?

18 KEITH MacKENZIE: No.

19 KATE McGRANN: And is that a, no, you
20 don't know? Or, no, it wasn't common in the
21 industry at the time the project agreement was
22 signed?

23 KEITH MacKENZIE: No, I don't know.

24 KATE McGRANN: And do you know if that
25 approach is common in the industry today?

1 KEITH MacKENZIE: I do not.

2 KATE McGRANN: Are you aware of any
3 projects in which that approach has been taken
4 other than the City of Ottawa?

5 KEITH MacKENZIE: This is not an area
6 of my expertise. My answer is no, I don't know.

7 KATE McGRANN: The approach that was
8 taken to the vehicle provider in the procurement
9 process, I have a general understanding that there
10 were efforts to at least offer the option to bid in
11 consortia that they did not have to come with a
12 specific vehicle provider in mind.

13 Do you know what I'm referring to?

14 KEITH MacKENZIE: No.

15 KATE McGRANN: Okay. Do you know if
16 there are any changes made to the PSOS with respect
17 to the vehicle requirements after the first
18 iteration of the RFP was released?

19 KEITH MacKENZIE: I don't know if there
20 were specific changes to the vehicle requirements.
21 It's quite possible.

22 The RFP was, as we refer to it, on the
23 street for, I believe, almost a year, with several
24 iterations to the contract and to the PSOS
25 requirements. So it's likely, but I can't say

1 specifically whether there were changes or not.

2 KATE McGRANN: Okay. I believe that
3 there was a change to the maintenance period
4 length, possibly 15 years to 30 years. Did you or
5 STV have any involvement in considering the length
6 of the maintenance period that would be included in
7 the contract?

8 KEITH MacKENZIE: I'm not aware of any
9 changes that were made to the maintenance period.
10 It was -- my recollection is that it was matched to
11 the life of the vehicle, or the near life of the
12 vehicle.

13 It's common that vehicle life is
14 approximately 30 years, and the maintenance term
15 was matched to that with some hand back requirement
16 so that the next stage would have at least a few
17 years to procure vehicles or plan on vehicle
18 retirement.

19 But I believe the duration of the
20 contract was intended to match the life of the
21 vehicles.

22 KATE McGRANN: Okay. Just so that I'm
23 clear. When you say the life of the vehicles, I
24 believe that you're referring to the anticipated
25 life of ALRV, not the life of a specific vehicle

1 provided by a specific provider.

2 KEITH MacKENZIE: It's not tied to a
3 specific vehicle or a specific provider. But it's
4 the design life of the vehicle. And it's quite
5 common that the vehicles run for 30 years; that's
6 kind of the industry standard.

7 KATE McGRANN: I understand an
8 independent assessment team was struck in 2017.
9 And I'm putting that number at the right of way,
10 because it postdates your involvement by some
11 years.

12 But do you have awareness of that team
13 being struck with respect to this project?

14 KEITH MacKENZIE: Yes.

15 KATE McGRANN: What can you tell me
16 about -- what awareness do you have and why do you
17 have it basically -- that will help me understand
18 the questions I can ask you about this.

19 KEITH MacKENZIE: After 2013, I was no
20 longer the project manager for the Capital Transit
21 Partners. But I still was involved in the project
22 from STV's perspective, kind of managing our
23 contract with the City.

24 So it's in that context that I'm aware
25 of the request that came later in 2017.

1 KATE McGRANN: So what's involved in
2 managing the contract with the City after 2013?

3 KEITH MacKENZIE: I'm the point person
4 for STV with the JV for resources that might be
5 requested. Perhaps a new scope of work that was
6 being contemplated, things of that nature.

7 KATE McGRANN: Okay. Other than the
8 independent assessment team, were there any
9 additions to STV's scope of work with respect to
10 Stage 1 of the LRT?

11 KEITH MacKENZIE: No, I don't think so.
12 Services that were called upon were within what
13 could be expected for providing services to the
14 City during their final design and construction.

15 KATE McGRANN: Leaving aside the
16 independent assessment team for a second, was STV
17 involved in any construction progress monitoring
18 wherein helping the City to understand the progress
19 of construction, whether there are any issues they
20 should be alive to?

21 KEITH MacKENZIE: No. The progress of
22 construction was monitored by the City.

23 KATE McGRANN: Do you know if it was
24 assisted in that work by any other outside
25 consultants or advisors?

1 KEITH MacKENZIE: As I had mentioned
2 earlier, some of the staff that worked for the City
3 were independent contractors. So those consultants
4 were certainly involved.

5 KATE McGRANN: Other than them, anybody
6 else?

7 KEITH MacKENZIE: Not that I can
8 recall. It would not have come into my view in the
9 role that I was after 2013.

10 KATE McGRANN: Focusing on the
11 independent assessment team, were you at all
12 involved in responding to the request for that work
13 to be done?

14 KEITH MacKENZIE: Yes.

15 KATE McGRANN: And what was your
16 involvement?

17 KEITH MacKENZIE: Assisting in writing
18 the proposal letter or offer letter.

19 KATE MC GRANN: Can you summarize for
20 us what the independent assessment team was
21 proposing to do?

22 KEITH MacKENZIE: I believe the City
23 was looking for outside advice on where RTG was in
24 the completion of their work, in their fitness for
25 revenue service. Or leading up to revenue service.

1 They were having difficulty --

2 KATE McGRANN: Sorry, go ahead.

3 KEITH MacKENZIE: The City was having
4 difficulty getting reliable information from RTG.

5 KATE McGRANN: How was the independent
6 assessment team proposing to assist with that?

7 KEITH MacKENZIE: I really don't have
8 in-depth knowledge on the details on how that was
9 going to be done.

10 KATE McGRANN: Do you know what the
11 output of the team's work was to look like? Was it
12 to be a report? Was it to be a series of meetings,
13 for example?

14 KEITH MacKENZIE: I think all of the
15 above. I think there was a report that was
16 written. I know they attended meetings, but I was
17 not part of that work. I didn't see the report,
18 didn't review the report, didn't attend the
19 meetings.

20 KATE McGRANN: Who at STV would be best
21 positioned to discuss the work of the independent
22 assessment team?

23 KEITH MacKENZIE: Most of the staff --
24 most of the people that were involved in that that
25 had worked for STV are no longer with STV. The one

1 individual who is still with STV is Scott Krieger,
2 and I believe he was part of that team.

3 KATE McGRANN: Okay. And the team, was
4 it composed only of members of STV, or were there
5 other members on the team as well?

6 KEITH MacKENZIE: No, there were others
7 on the team as well.

8 KATE McGRANN: Who else was one the
9 team?

10 KEITH MacKENZIE: Members of AECOM.

11 KATE McGRANN: Any others?

12 KEITH MacKENZIE: I believe it was just
13 those two firms, STV and AECOM.

14 KATE McGRANN: Do you know if STV was
15 consulted at all by the City as the system neared
16 substantial completion and revenue service
17 availability?

18 KEITH MacKENZIE: I believe that
19 assessment team was in place at that time.

20 KATE McGRANN: Okay. And other than
21 the assessment team, do you know if STV was
22 consulted by the City as the system neared
23 substantial completion and revenue service
24 availability?

25 KEITH MacKENZIE: I don't believe we

1 were.

2 KATE McGRANN: Do you know if any of
3 the members of Capital Transit Partners generally
4 were consulted outside of the work of the
5 independent assessment team?

6 KEITH MacKENZIE: I don't have
7 knowledge of that.

8 KATE McGRANN: I understand that STV
9 has been retained to do preliminary engineering
10 work and program management for Phase 2 of the
11 light rail transit system in Ottawa; is that right?

12 KEITH MacKENZIE: That's correct.

13 KATE McGRANN: Do you have any
14 involvement in that work?

15 KEITH MacKENZIE: Yes.

16 KATE McGRANN: To your knowledge, has
17 anyone done any sort of assessment or evaluation of
18 the work that was done on Stage 1 to put together a
19 sort of "lessons learned" or "areas where things
20 may be done differently"?

21 KEITH MacKENZIE: Yes.

22 KATE McGRANN: Can you describe what's
23 been done in that respect?

24 KEITH MacKENZIE: Certainly a lessons
25 learned exercise was done by Capital Transit

1 Partners.

2 I believe the City also did one
3 independently.

4 KATE McGRANN: Okay. With respect to
5 the lessons learned work done by Capital Transit
6 Partners, what was examined?

7 KEITH MacKENZIE: Do you mean what were
8 the lessons that were learned?

9 KATE McGRANN: Sure, we can come at it
10 that way. In fact, why don't we start like this.

11 How was that work embodied? Was there
12 a report? Were there a series of documents put
13 together? What resulted from that work?

14 KEITH MacKENZIE: What we did is, we
15 had each of our discipline leads write what worked
16 well and what did not work well.

17 And that was across, as I recall, all
18 the different -- the different disciplines and was
19 kind of the broad categories that I mentioned
20 before, bridges and maintenance facilities and
21 systems and traffic management and all those fun
22 things.

23 Those were then collected, organized,
24 reviewed and consolidated. And where they had
25 similar themes, they were combined. But at the

1 end, we consolidated into a single document,
2 "Lessons Learned".

3 KATE McGRANN: If this question doesn't
4 make sense in the context of the documents that
5 were put together, just let me know.

6 Can you give me a sense of the number
7 of lessons that were outlined in that document?

8 KEITH MacKENZIE: I think, at the end,
9 there was likely 12 to 18 lessons that were taken
10 away.

11 KATE McGRANN: Are you able to give me
12 an overview of what the lessons were?

13 KEITH MacKENZIE: I haven't reviewed
14 any documents specifically to that. I do have some
15 distinct recollections of what those lessons were.

16 The one that sticks with me most
17 clearly is closer integration with the agency. So,
18 for example, the Rail Implementation Office on
19 Stage 1 was our day-to-day contact. And our
20 integration with OC Transpo was minimal.

21 And when it came in, it sometimes came
22 in later than would have been hoped for.

23 And that was rectified in Stage 2. We
24 had much closer involvement with OC Transpo. Much
25 closer relationship with them, so that we

1 understood sooner, more directly, what their
2 desired outcomes were.

3 I'm sorry, but that's the only one that
4 I recall.

5 KATE McGRANN: No, that's just fine.

6 With respect to the involvement of OC
7 Transpo in Stage 1, from where you were sitting
8 what role did they play in the work that STV did?

9 KEITH MacKENZIE: I mentioned earlier
10 the passenger density on the trains, how closely
11 people would be placed together. I'm pretty sure
12 that that element came from OC Transpo on Stage 1.

13 Beyond that, again, the call for
14 redundant elevators was something that OC Transpo
15 insisted on. I don't have any other recollections.

16 KATE McGRANN: Okay. And contrast for
17 that for me with OC Transpo's involvement in Stage
18 2. What has their involvement in the work been
19 like in Stage 2?

20 KEITH MacKENZIE: In Stage 2 they were
21 much closer to us in working on the vehicle
22 maintenance facilities, what they wanted. They
23 worked more closely with us on how service might be
24 launched in the beginning and the end of the day.

25 And certainly, a very keen perspective

1 on the passenger experience, making sure the
2 designs accommodated the passengers in a way that
3 would encourage their use of this system.

4 KATE McGRANN: What benefits flowed
5 from OC Transpo's involvement in the vehicle
6 maintenance facilities in Stage 2? How was that
7 good?

8 KEITH MacKENZIE: It made clear the
9 outcomes that they were looking for. And it made
10 it clear early in the process.

11 KATE McGRANN: Was it the case in Stage
12 1 that you got feedback from OC Transpo in the
13 maintenance facility later in the day than would
14 have been ideal?

15 KEITH MacKENZIE: I think the
16 maintenance facility was less of a concern in Stage
17 1. The location was set early. And my only memory
18 of the discussions with OC Transpo in regards to
19 the maintenance facility on Stage 1 was the covered
20 storage.

21 They were pretty adamant about having
22 the vehicles underneath a roof because of the
23 amount of snow that Ottawa anticipates, and they
24 thought that was important in order to be able to
25 reliably launch service, even in adverse weather

1 conditions.

2 KATE McGRANN: With respect to the
3 service launch at the beginning and the end of the
4 day, are you referring to like the beginning and
5 end of each day of service once the line goes into
6 service?

7 KEITH MacKENZIE: Yes.

8 KATE McGRANN: What is OC Transpo's
9 involvement look like in Stage 2 on that front?

10 KEITH MacKENZIE: We had, I think three
11 options for locating the second maintenance
12 facility. And OC was pretty determined to have it
13 at a location that was in their best interest in
14 the long-term.

15 We were conscious of costs and were
16 looking for something that was perhaps more
17 economical, but not best suited for the long-term.

18 And OC, with the City's interest, more
19 broadly than just the project, chose the solution
20 that was in the City's best interest in the
21 long-term.

22 KATE McGRANN: Okay. And so I'm just
23 trying to understand, that relates to service
24 launch, but I assume it's because the trains are
25 coming from the maintenance facility at the

1 beginning of the day and turning at the end of the
2 day; is that --

3 KEITH MacKENZIE: That's part of it.
4 That's part of it.

5 The location that was finally selected
6 also had other intrinsic benefits on its size and
7 its ability to service trains and things like that.

8 KATE McGRANN: Okay. And again, I'll
9 ask you to compare and contrast that to the
10 experience in Stage 1.

11 Did you see any repercussions for OC
12 Transpo's lack of involvement in your work there on
13 this topic?

14 KEITH MacKENZIE: No.

15 KATE McGRANN: So let me come at it
16 this way.

17 What grounded the lessons learned about
18 OC Transpo's involvement and the idea that they
19 should be more thoroughly involved more at the
20 front end of the project; what about the experience
21 in Stage 1 led to that lesson?

22 KEITH MacKENZIE: There are a lot of,
23 I'll use the term "decisions"; perhaps "influences"
24 might be better. But there's a lot of input that
25 the owning agency should be having on the designs

1 and the systems that are eventually given to them.

2 Without them being there, either you're
3 making that decision for them, or the decisions are
4 being delayed.

5 If you make the decision for them and
6 you make the wrong decision it's likely they're
7 going to ask you to change it later, which means
8 you're going to do work twice. Or it may take a
9 little longer than you had hoped.

10 So having them involved more directly,
11 just smooths the process out.

12 KATE McGRANN: Okay. At Stage 1, can
13 you recall any decisions that were made in the
14 absence of OC Transpo's involvement that needed to
15 be revisited as a result of information or
16 decisions coming out of OC Transpo?

17 KEITH MacKENZIE: I think it was mostly
18 around the station designs and passenger flows.

19 They were pretty set on having what
20 they called free-body transfer from the buses to
21 the trains. Meaning, that if you had already paid
22 to get on the bus by tapping your pass, or going
23 way back in time, you know, getting your paper
24 ticket, they didn't want the passengers to have to
25 do that a second time in order to get on to the

1 train.

2 So that when someone got off the bus,
3 they could freely walk into the train station and
4 get on a train. So that it was free body
5 transfers, was the term that was used.

6 And I think early in the design, that
7 was not a consideration for us. You know, we know
8 a lot of systems that, you know, if you get off a
9 bus and you get on a train, you pay again, or you
10 pay a different fare, or you pay a partial fare.

11 But many times it requires interacting
12 with another type of vending equipment. OC Transpo
13 did not want to have that.

14 Again, to try and encourage ridership,
15 you pay when you get on the bus in your
16 neighbourhood, and you'd ride their system, even
17 though it's intermodal, you ride their system
18 throughout and you pay once.

19 So we had to reconfigure -- my memory
20 is we had to reconfigure some station and bus stop
21 area drop-offs in order to accommodate that.
22 Again, if we had gotten that feedback earlier, we
23 could have done it earlier.

24 KATE McGRANN: Do you remember when you
25 did get that feedback?

1 KEITH MacKENZIE: I don't. I don't
2 have a specific memory. But I do recall that,
3 particularly early in the project, the interface
4 between the rail and implementation office and OC
5 Transpo was minimal. It did improve near the end;
6 it had to.

7 But it did create some rework or some
8 changes that needed to be done late in the project.
9 But again, I believe it was almost entirely around
10 station designs and the passenger experience.

11 KATE McGRANN: And when you say
12 "created work that needed to be done later in the
13 project" generally, can you let me know when that
14 work needed to be done? For example, did work done
15 needed to be revisited before the release of the
16 RFP; during the construction process?

17 KEITH MacKENZIE: So it was prior to
18 the submission of the bids. So we had kind of a
19 drop dead date. So many weeks before the bids were
20 due in order to allow bidders to adjust to changes
21 that we had made. And there were a fair number of
22 changes made during the open market period.

23 But I know all that work was done,
24 certainly before that drop dead date in the
25 procurement period, but likely it was done, you

1 know, right around the time that we're putting the
2 bid out in the street. So perhaps a year even
3 before the bids were due.

4 But it was design work that needed to
5 be done. It would have been better if it was
6 identified prior to the 15 percent design being
7 completed, and it was likely closer to the end of
8 the 30 percent design that we were required to make
9 changes.

10 KATE McGRANN: Do you remember if been
11 those changes had any implications for the -- let
12 me put it this way -- any material implications for
13 the overall cost estimates that had been put
14 together?

15 KEITH MacKENZIE: I don't think so.
16 Their insistence on double elevators or redundant
17 elevators was there from the get-go, so that's not
18 one of the changes we had to make. It was really
19 just re-configuring bus loops and drop off areas
20 and pathways in and out of the station.

21 So although they may not be considered
22 material in bid price, from a designer's
23 perspective, making those kinds of changes, even if
24 it's just moving, you know, curbs and drive lanes,
25 is a little bit problematic when it comes late in

1 the process.

2 KATE McGRANN: Makes sense.

3 And in respect to delays and decisions,
4 do you remember any decisions that had to be
5 delayed awaiting OC Transpo involvement?

6 KEITH MacKENZIE: I don't have any
7 specific memory of anything that was delayed.

8 KATE McGRANN: Okay. Ms. Murynka, do
9 you have any follow up questions on anything that
10 we've discussed here?

11 DANIELLA MURYNKA: Just one.

12 Sir, you gave some evidence with
13 respect to the independent assessment team. Your
14 evidence was, I'll just paraphrase, that the City
15 was looking for outside advice here, where RTG was
16 at in relation to the completion of the work.

17 One of the reasons the City was doing
18 that was because the City was having difficulty
19 getting reliable information from RTG.

20 I wondered if you could tell me, sir,
21 how did you know that the City was having
22 difficulty getting reliable information from RTG?

23 KEITH MacKENZIE: That was the
24 information that was relayed to us.

25 DANIELLA MURYNKA: Was it formally

1 relayed in a document, or was it informally
2 relayed?

3 KEITH MacKENZIE: I believe it was
4 informally relayed.

5 DANIELLA MURYNKA: This was something
6 somebody told you?

7 KEITH MacKENZIE: It was something that
8 I was told, I don't recall any individual, but to
9 provide some further clarity, there were
10 requirements that RTG submit their schedules on a
11 regular basis, likely monthly. I don't believe
12 they were meeting that requirement.

13 DANIELLA MURYNKA: Thank you. That was
14 my question.

15 KATE McGRANN: We're coming to the end
16 of this just so you know. The Commission has been
17 asked to investigate the commercial and technical
18 circumstances that led to the breakdowns and
19 derailments experienced on Stage 1.

20 Other than the topics that we covered,
21 are there any other areas that you would suggest
22 that the Commission be looking to as part of its
23 investigation?

24 KEITH MacKENZIE: Yes.

25 KATE McGRANN: Would you please share

1 what those are?

2 KEITH MacKENZIE: The maintenance of
3 the system after revenue service I think is an area
4 that should be looked at closely.

5 KATE McGRANN: Can you be any more
6 specific than that?

7 KEITH MacKENZIE: Not really. I do
8 have, you know, the assessment team that has been
9 advising the City still does some work, I believe,
10 even up until the present time. And I understand
11 there are some issues there.

12 KATE McGRANN: The Commissioner has
13 been asked not only to answer the questions that
14 are posed in the Order in Council in terms of
15 reference, but also to make recommendations to
16 prevent issues like this from happening again.

17 Do you have any specific
18 recommendations or areas of recommendation that you
19 would suggest be considered as part of his work on
20 that front?

21 KEITH MacKENZIE: I do. But I'd like
22 to caveat this as, this is my opinion. Not
23 necessarily one of STV's or anyone else's.

24 KATE McGRANN: Understood.

25 KEITH MacKENZIE: But there is an

1 assumption in the contract that Projectco is a
2 single entity and that the contracts would
3 incentivize certain behaviors. This is the
4 IO model, as I understand it.

5 I'm not sure that the behaviors that
6 were anticipated from that model are being realized
7 in the relationship of the maintainers as being
8 part of, you know, the Projectco and having the
9 full influence that I think the IO model
10 anticipates.

11 So I think the disconnect that we may
12 be seeing here is on the incentives that were hoped
13 to be put upon the maintainers to ensure that the
14 systems stayed in service and the disruptions to
15 service would be minimal.

16 We're not seeing, I don't believe that
17 that's come to fruition in this contract. And
18 again these are my opinions, my opinions only.

19 KATE McGRANN: Just to better
20 understand your opinion on that piece. Are you
21 wondering whether the fact that RTM was arm's
22 length from RTG is somehow interfering with the
23 incentives that should be impacting its behaviour
24 as maintainer?

25 KEITH MacKENZIE: I don't have that

1 type of depth of understanding. But I do remember
2 from the introduction the IO model that when they
3 joined in the Stage 1 project, that there was a lot
4 of discussions about the structure of the contract,
5 and the penalties that were there for not running
6 service.

7 You know, if you didn't run the vehicle
8 kilometers that you were going to, you would lose
9 money and that would incentivize a particular
10 behaviour to ensure that didn't happen.

11 That incentive does not appear to be
12 strong enough to provide the level of reliability
13 that was anticipated.

14 KATE McGRANN: Well, those are the
15 questions that I had for you today. So thank you
16 very much for your help.

17 KEITH MacKENZIE: You're welcome.

18 KATE McGRANN: Mr. O'Brien, did you
19 have any follow up questions you wanted to ask
20 Mr. MacKenzie before we concluded the interview
21 today?

22 MICHAEL O'BRIEN: Ms. McGrann, can I
23 take a couple of minutes to review my notes and I
24 can tell you whether or not I'll have any follow up
25 questions for Mr. MacKenzie.

1 KATE McGRANN: Shall we just go off the
2 record but stay here? We'll turn off our cameras
3 and when you're ready to start up again, just turn
4 your camera back on and we'll go.

5 MICHAEL O'BRIEN: Sure, thank you.

6 -- RECESS TAKEN AT 11:39 A.M. --

7 -- UPON RESUMING AT 11:56 A.M. --

8 KATE McGRANN: Mr. O'Brien, did you
9 have any follow up questions wanted to ask the
10 witness?

11 MICHAEL O'BRIEN: I do, thank you
12 Ms. McGrann.

13 Mr. MacKenzie, you mentioned that Scott
14 Krieger would be an individual well positioned to
15 speak to the involvement of the IAT team post --
16 I'll say post 2017; do you remember that?

17 KEITH MacKENZIE: Yes.

18 MICHAEL O'BRIEN: Is it fair to say
19 that his involvement on that team was greater than
20 your involvement -- or his involvement in the
21 project from 2017 forward, was greater than your
22 involvement in Stage 1 project from 2017 forward?

23 KEITH MacKENZIE: Yes.

24 MICHAEL O'BRIEN: With respect to
25 specifics, or specific issues regarding the STV's

1 involvement in the project from 2017 forward, are
2 there any areas on which you would say you are the
3 greater authority than Mr. Krieger?

4 Again, Stage 1 of the project?

5 KEITH MacKENZIE: It's a hard question
6 to answer directly. But I will try to answer it
7 this way.

8 My involvement on the Stage 1 project
9 since 2017 has been superficial. Scott's
10 involvement has been very specific. But specific
11 in a very concentrated area, primarily the vehicle
12 and the maintenance of the vehicle.

13 So that would certainly make Krieger
14 much more knowledgeable in that area about anything
15 that has occurred since 2017.

16 There are areas that I probably still
17 know more than he does, because of my broad
18 involvement in the project overall that he has had
19 no involvement with. But I think it's immaterial
20 in nature relative to the inquiry.

21 MICHAEL O'BRIEN: Understood. Thank
22 you. And your testimony today was based
23 predominantly on your memory from your involvement
24 in the project from the time period from late 2010
25 until 2013; is that correct?

1 KEITH MacKENZIE: That is correct.

2 MICHAEL O'BRIEN: I don't have any
3 further questions for the witness, Ms. McGrann.

4 Thank you, Mr. MacKenzie.

5 KATE McGRANN: And nor do I. That
6 brings this interview to an end and we can go off
7 the record.

8

9 -- Concluded at 12:02 p.m.

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1 REPORTER'S CERTIFICATE

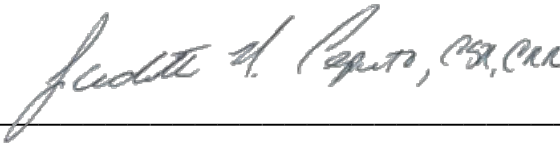
2
3 I, JUDITH M. CAPUTO, RPR, CSR, CRR,
4 Certified Shorthand Reporter, certify;

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

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

13 That the foregoing is a Certified
14 Transcript of my shorthand notes so taken.

15
16 Dated this 14th day of April, 2022.

17 
18 _____

19 NEESONS, A VERITEXT COMPANY

20 PER: JUDITH M. CAPUTO, RPR, CSR, CRR
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