

# Ottawa Light Rail Commission

Sergio Mammoliti  
on Wednesday, April 27, 2022



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OTTAWA LIGHT RAIL COMMISSION  
TUV Rheinland - SERGIO MAMMOLITI  
APRIL 27th, 2022

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--- Held via Zoom Videoconferencing, with all  
participants attending remotely, on the 27th day  
of April, 2022, 9:00 p.m. to 12:11 p.m.

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1 COMMISSION COUNSEL:

2 Christine Mainville, Co-Lead Counsel Member

3 Emily Young, Litigation Counsel Member

4

5 PARTICIPANTS:

6 Sergio Mammoliti: TUV Rheinland

7 Kevin Johnson: Lette Law Firm

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9

10 ALSO PRESENT:

11 Helen Martineau, Stenographer/Transcriptionist,

12 Elizabeth Deasy, Virtual Technician

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1 --- Upon commencing at 9:15 a.m.

2           EMILY YOUNG: Just to start today,  
3 Mr. Mammoliti, a short introduction about the  
4 purpose of the interview. The purpose of  
5 today's interview is to obtain your evidence  
6 under oath, or solemn declaration, for use at  
7 the Commission's public hearings. This will be  
8 a collaborative interview such that my  
9 co-counsel, Ms. Mainville, may intervene to ask  
10 certain questions. If time permits your counsel  
11 may also ask clean-up questions at the end of  
12 the interview.

13           The interview is, as you know, being  
14 transcribed and the Commission intends to enter  
15 this transcript into evidence at the  
16 Commission's public hearings, either at the  
17 hearings or by way of procedural order before  
18 the hearings commence. The transcript will be  
19 posted to the Commission's public website, along  
20 with any corrections made to it, after it is  
21 entered into evidence.

22           A transcript, along with any  
23 corrections later made, will be shared with the  
24 Commission's participants and their counsel, on  
25 a confidential basis, before being entered into

1 evidence.

2           You will be given the opportunity to  
3 review the transcript and correct any typos or  
4 other errors before it's shared with the  
5 participants or entered into evidence. Any  
6 nontypographical corrections will be appended to  
7 the transcript.

8           Pursuant to section 33(6) of the  
9 Public Inquiries Act 2009, a witness at an  
10 inquiry shall be deemed to have objected to  
11 answer any question asked of him or her upon the  
12 ground that his or her answer may tend to  
13 incriminate the witness, or may tend to  
14 establish his or her liability to civil  
15 proceedings at the instance of the Crown or of  
16 any person. And no answer given by a witness at  
17 an inquiry shall be used or be receivable in  
18 evidence against him or her in any trial or  
19 other proceedings against him or her thereafter  
20 taking place, other than a prosecution or  
21 perjury and giving such evidence. As required  
22 by section 33(7) of that Act, you are hereby  
23 advised that you have the right to object to  
24 answer any question under section 5 of the  
25 Canada Evidence Act.

1 SERGIO MAMMOLITI: Okay.

2 EMILY YOUNG: Okay. So I just want to  
3 start by talking about your professional  
4 background a little bit. And your counsel has  
5 sent us a copy of your CV so I'll just put that  
6 up on the screen.

7 SERGIO MAMMOLITI: Yes.

8 EMILY YOUNG: Can you see that?

9 SERGIO MAMMOLITI: I can, yes.

10 EMILY YOUNG: So what your CV shows is  
11 that you have experience with rail systems going  
12 back to 1992 when you started with Thales.

13 SERGIO MAMMOLITI: Correct, yeah.

14 EMILY YOUNG: And the expertise of TUV  
15 Rheinland, where you now work, that's in rail  
16 safety?

17 SERGIO MAMMOLITI: Yes. Yeah, this  
18 particular division is, yeah. They do a number  
19 of things, but yes.

20 EMILY YOUNG: But the division you're  
21 in is focused in rail safety?

22 SERGIO MAMMOLITI: Yes. Primarily,  
23 yeah. We do autonomous cars and other things,  
24 but I don't think you care about that.

25 EMILY YOUNG: So your CV here

1 describes you as Principal Safety and  
2 Reliability Engineer?

3 SERGIO MAMMOLITI: Uhm-hmm.

4 EMILY YOUNG: In general terms, what's  
5 your view as to the overlap between the safety  
6 and reliability of rail transit systems?

7 SERGIO MAMMOLITI: Oh, um, yeah,  
8 actually that's defined in a number of the  
9 standards. Basically the premise of that is if  
10 the system is not reliable it's -- the safety  
11 systems that -- the systems that you are relying  
12 on for the safety of the train, right? Think of  
13 like the brakes in your car, if they were not  
14 reliable then the system isn't safe. So the  
15 minimum level of reliability that's required  
16 for -- to assure system safety. Yes, CENELEC,  
17 that's a European standard, spells it out most  
18 clearly.

19 EMILY YOUNG: And it sounds like  
20 certain reliability issues would be considered  
21 essentially safety issues if they interact with  
22 parts of the system that are essential to  
23 safety?

24 SERGIO MAMMOLITI: Yeah. Yeah.  
25 That's -- the shortest way to say that, yeah. I



1 could lecture all day about it, but yeah.

2 EMILY YOUNG: Okay. Well, the short  
3 answer, I think, is good enough for us for now,  
4 thank you.

5 And so your expertise, it looks like,  
6 based on your CV, is specifically in RAMS  
7 compliance assessments?

8 SERGIO MAMMOLITI: Right.

9 EMILY YOUNG: RAMS, standing for  
10 reliability, availability, maintainability and  
11 safety?

12 SERGIO MAMMOLITI: Correct.

13 EMILY YOUNG: Okay. And your CV  
14 describes you as having been involved in over 25  
15 transit and railroad projects, specifically the  
16 RAMS efforts of those rail projects.

17 SERGIO MAMMOLITI: Yeah. I believe  
18 there's a list at the end, is there not? Yeah,  
19 there you go.

20 EMILY YOUNG: And can you describe  
21 what those RAMS efforts generally involved in  
22 those projects?

23 SERGIO MAMMOLITI: Okay, you're going  
24 to get the lecture.

25 Well, it depends what they want us to

1 look at. So if you look at that list, the last  
2 major bullet there under the TUV Rheinland,  
3 Caltrain, New Jersey Transit, those are both  
4 positive train control systems. So they, for  
5 example, were existing rail systems and they  
6 were bolting on this positive train control. So  
7 the scope of that was limited to this bolt-on.  
8 So it wasn't looking at the whole rail there.

9 And again, it depends on the -- the  
10 contract. Like the second-last bullet there,  
11 Tiefenbach, the axle counter, that's something  
12 you bolt on the track to protect the train  
13 that's gone by, so that's even lower down.  
14 That's one component of it.

15 But regardless, given the scope, what  
16 we're told, like here's the pieces parts.  
17 Systems engineering, let's start with that. You  
18 need parts A, B, C and D to make your car, for  
19 example, right? And what the safety analysis  
20 starts with is, okay, well, which parts of this  
21 car are safety critical? What parts of them  
22 contribute to the safety?

23 And the reason you do that is to  
24 winnow the list of the subsystems that make it  
25 up to -- for examination, and you get into more

1 and more scrutiny the more safety critical they  
2 are. Brakes on a car, for example, are safety  
3 critical, the engine less so. It doesn't matter  
4 if it can't move but it has to stop. That's the  
5 kind of winnowing we do. And then they get  
6 ranked and then that defines the level of  
7 scrutiny you go into each of them.

8           So once you do that you come up with  
9 what are the control measures? How do you  
10 prevent these nasty accidents from happening?  
11 And then there's some evidence that's generated  
12 that the design is sufficient. Then there's  
13 some evidence that it was built for the design,  
14 and then you're good to go. And that's, in a  
15 nutshell, that's what we do.

16           Check that the design is satisfactory  
17 and then check that it was built satisfactory.  
18 In very, very general terms that's the life  
19 cycle, if you will, of the safety RAMS stuff.

20           EMILY YOUNG: And when you talk about  
21 those determinations respecting what is safety  
22 critical and what is not, are those  
23 determinations that you would be making or are  
24 you kind of given that list by one of the  
25 constructors or parties involved in the project?

1                   SERGIO MAMMOLITI: In the context of  
2 Ottawa? Yeah, we were given that list. We did  
3 not come up with that list ourselves, yeah.

4                   EMILY YOUNG: And what about in other  
5 projects that you've worked on? What's the  
6 norm?

7                   SERGIO MAMMOLITI: Oh, other ones.  
8 Yeah, like the two positive train control ones I  
9 came up with the list on those ones, for  
10 example.

11                  EMILY YOUNG: Do you have a view on  
12 which approach tends to be better from a safety  
13 perspective?

14                  SERGIO MAMMOLITI: I'm not sure I  
15 understand the question. Which approach? I'm  
16 not sure what you mean.

17                  EMILY YOUNG: I guess, do you feel  
18 like you're better able to ensure that a system  
19 is safe if you're the one who's selecting that  
20 list of safety critical things, or if that list  
21 is given to you? Or does it not matter?

22                  SERGIO MAMMOLITI: They're different  
23 roles, right?

24                  So the engineering side is coming up  
25 with that list. And so, for example, in those

1 positive train controls the guy on the other  
2 side of the table from me, doing essentially  
3 what I did in Ottawa, was -- gee, I forget his  
4 name. Anyway, he worked for the Federal Railway  
5 Administration in the U.S., so both roles are  
6 necessary.

7           EMILY YOUNG: So you're distinguishing  
8 between someone, I guess, who's working  
9 internally to the project and devising safety  
10 standards, versus --

11           SERGIO MAMMOLITI: Right.

12           EMILY YOUNG: -- an external auditor,  
13 which is the role you filled in Ottawa?

14           SERGIO MAMMOLITI: Exactly, yeah.  
15 I've sat on both sides of the table so, yes.  
16 Yes.

17           EMILY YOUNG: So when you're  
18 fulfilling the external role you would generally  
19 have your parameters given to you?

20           SERGIO MAMMOLITI: As the auditor you  
21 mean? Yes. We're supplied and then we're asked  
22 to judge it against whatever standard they've  
23 chosen.

24           EMILY YOUNG: Okay. And so that's how  
25 it went in the Ottawa project?

1                   SERGIO MAMMOLITI: Yeah. Yeah.  
2 Ottawa was a little different, again. They  
3 were -- the term, I believe in the contract they  
4 wanted us to confirm safety requirements, is the  
5 way it was worded.

6                   EMILY YOUNG: What did you understand  
7 that to mean, to "confirm safety requirements"?

8                   SERGIO MAMMOLITI: So that first half  
9 of the thing that I told you, somebody  
10 identifies what are the pieces, parts that are  
11 safety critical here, you know, critical to the  
12 safety of the operation. They identify them and  
13 then from that you generate safety requirements,  
14 which are, okay, well, what does the system need  
15 to do to keep them safe?

16                   So it was -- we were meant to check  
17 that those requirements were implemented, those  
18 safety requirements.

19                   EMILY YOUNG: And we'll get into a  
20 little bit more detail.

21                   SERGIO MAMMOLITI: Yeah, yeah.  
22 Because -- and now we're splitting hairs again.  
23 There's an independent verification validation  
24 group that does that and then we audit. Does  
25 this look like it's up to snuff, or pick a

1 standard, right?

2 EMILY YOUNG: When you refer to the  
3 "independent verification group", do you mean  
4 the independent certifier or someone else?

5 SERGIO MAMMOLITI: No. The  
6 independent certifier is more a person who  
7 writes the cheque. So you hit this milestone in  
8 the project, did you meet the ten vehicles --  
9 it's more about payment milestones for the  
10 independent certifier and whether they should  
11 issue a cheque for that. So that's something  
12 different, again.

13 EMILY YOUNG: And so can you tell us  
14 who in the Ottawa project was performing that  
15 certification role, I guess, more internally?

16 SERGIO MAMMOLITI: Oh, I have no idea.  
17 I didn't really interact with them.

18 EMILY YOUNG: So that would have been  
19 somebody on the team -- on the Ottawa team  
20 basically, is that right?

21 SERGIO MAMMOLITI: I think it was  
22 somebody in Toronto that they were -- I honestly  
23 don't know. I never met them or spoke to them  
24 so I don't know who they are. I thought they  
25 were in Toronto, so it's not like they were in

1 Ottawa.

2           EMILY YOUNG: And so just going back  
3 to your professional experience, do you have  
4 experience working with other public-private  
5 partnership projects?

6           SERGIO MAMMOLITI: Yes. There's other  
7 ones like that. I believe Waterloo is on that  
8 list, I think it was like that. I'm sure I  
9 have. There's a long enough list there that I'm  
10 sure one of them at least was a public-private  
11 partnership.

12           EMILY YOUNG: And in your experience,  
13 was there anything different about working on a  
14 project that was run through a P3?

15           SERGIO MAMMOLITI: Nothing really that  
16 comes to mind. In the end we're doing the same  
17 thing. We're putting a transit system into  
18 service, right? I think that has more to do  
19 with money and things than my end of the work.

20           EMILY YOUNG: And what about  
21 municipalities, it looks likes you've worked  
22 with a few here?

23           SERGIO MAMMOLITI: I don't think it  
24 was ever directly with a municipality. Waterloo  
25 was through the supplier. Edmonton was the City



1 of Edmonton, as I recall.

2 EMILY YOUNG: I think you have  
3 Vancouver on here somewhere too.

4 SERGIO MAMMOLITI: Yeah. Vancouver,  
5 that was the -- yeah, they were -- they have --  
6 they had like TTC in Toronto where it's a  
7 Transit Commission, it's TransLink in Vancouver.  
8 And then they have BC Rapid Transit, they are  
9 the operator, if you will.

10 EMILY YOUNG: In this project were you  
11 engaged directly by the City of Ottawa or was it  
12 by OC Transpo?

13 SERGIO MAMMOLITI: No, City of Ottawa.

14 EMILY YOUNG: And did you find there  
15 was anything different or notable about working  
16 directly for the City?

17 SERGIO MAMMOLITI: Nothing comes to  
18 mind.

19 EMILY YOUNG: Okay. And just to make  
20 sure we have this right, you were engaged by the  
21 City to be a safety auditor of Stage 1?

22 SERGIO MAMMOLITI: Correct.

23 EMILY YOUNG: And did you have any  
24 other role in Stage 1 of the LRT project in  
25 Ottawa?

1 SERGIO MAMMOLITI: No, none at all.

2 EMILY YOUNG: So you've told us the  
3 Cities was your client, was it also the  
4 intention that you were supposed to act  
5 independently of the City?

6 SERGIO MAMMOLITI: Well, yes. That's  
7 parts of the role, right? We have to give an  
8 honest opinion of the assessment we make, right?  
9 There's guidelines from the Professional  
10 Engineers Ontario on that, right, about auditing  
11 other work. And so, yeah, we essentially follow  
12 those guidelines.

13 EMILY YOUNG: And our understanding is  
14 that you delivered your final report on this  
15 project to Richard Holder by email on  
16 September 13th, 2019, is that accurate?

17 SERGIO MAMMOLITI: I'm just looking at  
18 the document. That's the date on it. But,  
19 yeah, I think -- let me just check. Yeah. Yes,  
20 it is.

21 EMILY YOUNG: And once you submitted  
22 that report was your role or your mandate  
23 finished?

24 SERGIO MAMMOLITI: Yeah. That was it.  
25 We were done.

1           EMILY YOUNG: And can you, if you  
2 remember, can you tell us what the terms of your  
3 engagement by the City were?

4           SERGIO MAMMOLITI: I'm not entirely  
5 clear what you mean by that. I talked about the  
6 safety requirements. There's a Project  
7 Agreement, PA, that was referred to, and the  
8 City has the right to audit in that, and that's  
9 what they engaged us on, is basically the  
10 expertise in safety. Does this like good goods?  
11 And, again, specifically about, are these safety  
12 requirements -- I believe that's the wording in  
13 the contract -- nor the Project Agreement, which  
14 I believe is how the terms of reference were  
15 defined.

16           EMILY YOUNG: So that -- I may not  
17 have been clear before, but I think the terms of  
18 reference is what I'm asking about? What were  
19 the parameters of your engagement with the City?

20           SERGIO MAMMOLITI: So going back, we  
21 were engaged in July of 2017, actually I  
22 remember it well because that was Canada's  
23 150th and we showed up on the 5th of July,  
24 right after the 150th celebration.

25           So it was, I believe, originally

1 slated to open sometime in May of 2018, and they  
2 needed an assessment by November of 2017, so six  
3 months in advance, to -- it was something to do  
4 with the Unions and they had to give them six  
5 months' notice. So they needed an opinion by  
6 November of the safety requirements, have they  
7 been fulfilled? So, as I said, we were engaged  
8 in July of 2017 to do that. That's essentially  
9 the terms.

10 EMILY YOUNG: And our understanding is  
11 that there was some sort of safety audit plan  
12 that set out the tasks that you were to perform  
13 in your role?

14 SERGIO MAMMOLITI: Correct, yeah.

15 EMILY YOUNG: And who created that  
16 plan?

17 SERGIO MAMMOLITI: We did actually.  
18 Yeah, we laid out the approach we were going to  
19 use. We get a one-liner, "verify safety  
20 requirements". So we, okay, here's what we're  
21 going to do to do that. That's the essence of  
22 the audit plan, yeah.

23 EMILY YOUNG: And what were those  
24 steps, if you can explain it briefly?

25 SERGIO MAMMOLITI: Yeah. If you look

1 at the audit report it's the exact same steps,  
2 right? If you look in the table of contents  
3 there's audit resulting recommendation and it's  
4 task 1, task 2, task 3, task 4, that's what the  
5 audit plan laid out. Task 1 was create the  
6 audit plan.

7 EMILY YOUNG: So it lines up with the  
8 conducts of the report?

9 SERGIO MAMMOLITI: Correct.

10 EMILY YOUNG: And we're more or less  
11 finished talking about your experience so I'll  
12 just stop sharing your CV here. And if we could  
13 make it the first exhibit to this examination.

14 EXHIBIT NO. 1: Curriculum Vitae of  
15 Sergio Mammoliti.

16 EMILY YOUNG: And you've talked a  
17 little bit about this already, and we wanted to  
18 know your understanding of why the City hired a  
19 safety auditor for the project? And it sounded  
20 like they wanted the assessment six months  
21 before the original revenue service availability  
22 date?

23 SERGIO MAMMOLITI: So that's more than  
24 just the safety audit, that was a number of  
25 things that fed into there. I forget the exact

1 term. I think I used it in the -- revenue  
2 service availability dates. So that was  
3 originally the May 18, 2018, date. There was  
4 something else they called the date prior, the  
5 six months prior. But, anyways, that was the  
6 intent of that report. We had to get them  
7 confidence that this thing was going to be  
8 available or ready in six month's time.

9 EMILY YOUNG: On a project like this  
10 would it be standard practice to engage an  
11 independent safety auditor like yourself?

12 SERGIO MAMMOLITI: Yes. Yeah. That's  
13 fairly normal.

14 It depends. Some jurisdictions are  
15 self-certifying. New York City transit, for  
16 example, is like that, I think TTC is as well.  
17 But they generally bring in some kind of  
18 expertise or have their own in-house to do it.  
19 It's not unusual, let's put it that way.

20 EMILY YOUNG: And do you know whether  
21 they are required by any regulation or anything  
22 like that to do that, to bring in someone to  
23 certify?

24 SERGIO MAMMOLITI: In Canada, no,  
25 they're not required to in Canada.

1                   EMILY YOUNG: Thank you. And was  
2 there sort of any other reason, particular to  
3 this project, that was ever communicated to you?

4                   SERGIO MAMMOLITI: I'm not sure I  
5 understand.

6                   EMILY YOUNG: So I'm wondering if  
7 beyond this -- the engagement of an independent  
8 safety auditor being relatively standard  
9 practice, was there anything about the state of  
10 this project, its progress, for example, that  
11 you understood might have motivated the City to  
12 retain you?

13                  SERGIO MAMMOLITI: No. I guess you'd  
14 have to ask the City about their motivation. I  
15 don't think so.

16                  EMILY YOUNG: And to your knowledge,  
17 you spoke about this before. It sounds like the  
18 City was also reviewing the safety aspects of  
19 the project themselves?

20                  SERGIO MAMMOLITI: Yeah. They had  
21 other people in there who were doing -- well  
22 there was a whole gambit of people they had  
23 involved in this.

24                  I know they had a separate security  
25 guy, given the proximity to the Parliament

1 buildings. They had a -- some guy there who did  
2 specifically that.

3 EMILY YOUNG: And did you have any  
4 contact with the people within the City who were  
5 working on safety?

6 SERGIO MAMMOLITI: Yeah. Like -- I  
7 can't remember his name now, the guy who did the  
8 security side of things. We would have to  
9 co-ordinate some things. There were Derrick  
10 Wood [ph] I think was another guy, he was hired  
11 by the City. Robert Freedman I think was the  
12 other fellow. He was liaising with the  
13 emergency services, for example, so ensuring  
14 that emergency response plans were in place and  
15 things like that.

16 So there was different individuals  
17 there, yeah.

18 EMILY YOUNG: And were there  
19 individuals who were involved in the contractor  
20 side who were also working on this and who you  
21 were in contact with?

22 SERGIO MAMMOLITI: Yes. They were,  
23 yeah. Yeah, that was just the City people.  
24 That was prior -- SNC-Lavalin that most of them  
25 came from. It was kind of hard to tell who was



1 wearing what t-shirt, for example. There was so  
2 many groups of people there. Certainly people  
3 that were on the Rideau Transit Group side of  
4 things, yeah.

5 EMILY YOUNG: And did the IC review  
6 the safety aspects of the project?

7 SERGIO MAMMOLITI: I have no idea, you  
8 have to ask them. Again, I think there was  
9 someone that just signed cheques. I think all  
10 he probably looked at was that there was one.  
11 But, again, you should confirm that with them.

12 EMILY YOUNG: And were the safety  
13 standards that you were looking at for this  
14 project governed by the Project Agreement?

15 SERGIO MAMMOLITI: Yeah. There were a  
16 number of them, I believe, that were called up  
17 in the Project Agreement, and that's typical.  
18 There's a laundry list of ones to pick from so,  
19 yes.

20 EMILY YOUNG: And do you know where  
21 those standards would have come from?

22 SERGIO MAMMOLITI: They're typical  
23 ones. There's some North America, the IEEE,  
24 APTA, AREMA. It depends what aspect of the job  
25 were talking about. CENELEC is that European

1 one I was telling you about, that one was named  
2 as well, I believe. And, yeah, they're fairly  
3 consistent from rail project to rail project.

4 EMILY YOUNG: And as far you knew was  
5 there anyone who was assessing the sufficiency  
6 of this list of requirements in the Project  
7 Agreement?

8 SERGIO MAMMOLITI: I don't know that,  
9 no, I don't know. That list was created by  
10 others, I don't know who though.

11 EMILY YOUNG: So it wasn't part of  
12 your role to do that, to look at the sufficiency  
13 of the requirements?

14 SERGIO MAMMOLITI: Of the list of  
15 standards you mean? No. No, no. By that point  
16 the contracts are all signed and everybody's  
17 trying to deliver to those. So, no, that was  
18 not in my -- that would have been way outside my  
19 role.

20 EMILY YOUNG: And imagine that you had  
21 reviewed this list of standards and you thought,  
22 there's a huge gap here, or there's something  
23 missing that I think should be there. Is that  
24 something that you would raise with the City?

25 SERGIO MAMMOLITI: Gee, that's a very

1 hypothetical question. I don't think that I've  
2 ever been in that position.

3 Yeah, as a professional engineer I  
4 would have had a duty to inform because public  
5 interest is paramount, right? So theoretically,  
6 yes.

7 EMILY YOUNG: Well, it's good to hear  
8 that that's not something you have encountered.

9 So it sounds like you're saying the  
10 process of reviewing those requirements for  
11 sufficiency would have been done at the front  
12 end of the project when the PA was being  
13 developed?

14 SERGIO MAMMOLITI: Yeah. I've never  
15 developed a PA so I would think so, I would  
16 guess.

17 EMILY YOUNG: And just to talk a  
18 little bit about sort of the general process of  
19 your audit, could you tell us what were the  
20 things that you did as safety auditor from when  
21 you were engaged to the end of your mandate in  
22 September of 2019?

23 SERGIO MAMMOLITI: That's actually  
24 fairly well outlined by the tasks we identify,  
25 right. Step 1, come up with a plan; step 2,

1 just looking at the table of contents, go find  
2 the requirements; step 3, see if they have some  
3 kind of management system to processes. Do they  
4 have a way of managing these things internally?  
5 And then step 4 is look at the results of those  
6 things; and step 5, you can see it's broken into  
7 two parts there, it's 5(a) and 5(b). That was,  
8 okay, did you build it the way you designed it?  
9 And that's why it's split up into 5(a) and (b).

10 Have you controlled all the identified  
11 hazards and do you have a safety case, which  
12 kind of summarizes all that and stitches it  
13 together? So that's the structure of the plan  
14 and the report that we produced.

15 EMILY YOUNG: So that first step,  
16 coming up with the plan, that was your plan and  
17 that step was sort of on you?

18 SERGIO MAMMOLITI: Yes, agreed. And  
19 again, this is not a lot new under the sun here,  
20 right? It's fairly straightforward. You  
21 identify the hazards. Do you have a plan to  
22 tackle them? Did you do that? Let's see some  
23 evidence.

24 EMILY YOUNG: And the second part of  
25 that you said was to find the requirements.

1 What would that involve?

2 SERGIO MAMMOLITI: That's what we call  
3 a hazard analysis. That's basically what I was  
4 telling you about, like the car analogy, right?  
5 There's a thousand pieces to these, which one of  
6 them affects safety? And that's identifying the  
7 requirements against those pieces. What has  
8 safety responsibility and what are they? What  
9 are those responsibilities?

10 EMILY YOUNG: Would the constructor be  
11 devising those requirements?

12 SERGIO MAMMOLITI: Yes.

13 EMILY YOUNG: So you're then looking  
14 at those requirements to see whether they will  
15 achieve the standards in the Project Agreement?

16 SERGIO MAMMOLITI: Yeah. Essentially  
17 that's the gist of it. Again, I could spend all  
18 day talking about it, but that's the gist of it.

19 EMILY YOUNG: Okay. And then the next  
20 thing you mentioned was looking at whether  
21 there's a management system to process. Can you  
22 briefly explain how that management system would  
23 work?

24 SERGIO MAMMOLITI: It's a number of  
25 things, the competency of the people involved.

1 Do you have process for tracking these? It's  
2 mostly process oriented. How are you reviewing  
3 these? How are you tracking them? It's a  
4 safety management system we're looking at,  
5 right? Some of these things, how are they  
6 managed? Are they managed by design or do you  
7 have to come up with some sort of standard  
8 operating procedure? You know, rotate the  
9 tires, kick the wheels, change the oil sort of  
10 thing. And do they have a process for managing  
11 all that? That's essentially the process of  
12 looking at that.

13 EMILY YOUNG: When you look at that --  
14 I mean, you're reviewing this before the system  
15 is in operation, so does that mean you're  
16 basically looking at what they have on paper?

17 SERGIO MAMMOLITI: Correct.

18 EMILY YOUNG: And would you also be,  
19 you know, speaking to key individuals or doing  
20 things like that?

21 SERGIO MAMMOLITI: Well, so we get  
22 these processes, these plans and then, yeah, we  
23 start asking questions. What's this? What's  
24 that? That's essentially how it works. We  
25 don't understand this. This isn't clear. Kind

1 of like this interview.

2 EMILY YOUNG: So an iterative process  
3 of sorts?

4 SERGIO MAMMOLITI: Yeah.

5 EMILY YOUNG: And would you do any  
6 work analyzing these processes in the context of  
7 the testing and commissioning and trial running  
8 phases?

9 SERGIO MAMMOLITI: Not sure what you  
10 mean about analyzing the processes. Basically  
11 I'm judging them against the standards that are  
12 quoted. Do your processes align up to what's  
13 dictated in the standards?

14 EMILY YOUNG: So I guess the question  
15 is more about, in order to make sure they're  
16 capable of implementing the processes, would you  
17 be out there watching them practice and  
18 assessing whether they're doing it?

19 SERGIO MAMMOLITI: No, no. They feed  
20 me paperwork for the most part. I mean, I did  
21 walk around just to have a look and familiarize  
22 myself. It's one thing to read it on paper,  
23 it's another thing to see it live. But, no, no,  
24 I'm not required to witness.

25 EMILY YOUNG: Okay. So that -- does

1 the same go for the next step when you're  
2 looking at the results? You're looking at more  
3 or less what's on paper?

4 SERGIO MAMMOLITI: Uhm-hmm, correct.

5 EMILY YOUNG: And in looking at  
6 whether that system on paper, again, as you've  
7 said, basically implements the safety standards  
8 in the Project Agreement?

9 SERGIO MAMMOLITI: Yeah, do they have  
10 evidence? Yeah. If there was a hazard, do you  
11 have a safety requirement? You said you were  
12 going to build this and there's some evidence  
13 that you built it. Somebody's tested it or  
14 reviewed it. It depends, right, when someone  
15 has reviewed standard operating and someone's  
16 done a test report, things like that.

17 EMILY YOUNG: So when you get to the  
18 next step of looking at whether they actually  
19 built things the way they said they were going  
20 to, you mentioned walking through to have a look  
21 at the system. Would that be part of the, did  
22 you build it the way you said you did aspect?

23 SERGIO MAMMOLITI: No, absolutely not.  
24 That was just so I could picture -- it's one  
25 thing to see a picture or a graph or something



1 on a piece of paper.

2 It's another thing to -- oh, that's  
3 what it looks like. That was for my benefit,  
4 it's not really part of the job.

5 EMILY YOUNG: So you're looking more  
6 so then -- in the, did you build it the way you  
7 said? You mentioned about looking at sort of  
8 reports or reviews?

9 SERGIO MAMMOLITI: Yeah, exactly. So  
10 the process says you're going to do a test  
11 report. Show me. Where's this test report?

12 So it says you're going to do a review  
13 of the standard operating procedures. Did  
14 somebody do that? That kind of thing.

15 EMILY YOUNG: And would you look at  
16 not only did someone do the review, would you  
17 also look at the results of the review?

18 SERGIO MAMMOLITI: Yeah. We get into  
19 a sticky situation there too. I can ask them  
20 questions about it, but, again with the little  
21 pinky ring, the P.Eng. thing, if they signed it  
22 and sealed it, I get into ethic violations if I  
23 start overruling them on things. So, no, that's  
24 certainly not in our gambit.

25 EMILY YOUNG: That's interesting. So

1 if an engineer has -- let's use the word  
2 certified, or signed and sealed a report, you --  
3 there's a limited amount you can do to kind of  
4 look behind it?

5 SERGIO MAMMOLITI: No, no, I can look  
6 all I want and if I see something I ask them  
7 questions. And it's sort of like a professional  
8 courtesy, much like lawyers, right? You get  
9 slapped on the wrist for disparaging your  
10 colleagues publicly, right? Same.

11 I owe them a duty of care to ask them  
12 questions. If I see something wrong I'll ask  
13 them, Are you sure about this? Do you need to  
14 correct this? This doesn't look right. That  
15 kind of thing.

16 But, no, once they seal it it's -- I  
17 guess the equivalent of law was that you have a  
18 ruling by a judge, and there has to be some  
19 extraordinary or compelling reason to go and  
20 change that.

21 EMILY YOUNG: Do you recall having  
22 those types of discussions with anyone on the  
23 Ottawa project?

24 SERGIO MAMMOLITI: No. No, they were  
25 all -- this is all hypothetical.

1                   EMILY YOUNG: And the last thing you  
2 mentioned, have you controlled the hazards?  
3 Have you present a safety case that is approved?

4                   SERGIO MAMMOLITI: Uhm-hmm.

5                   EMILY YOUNG: And my understanding is  
6 that a safety case is kind of like a full  
7 package of everything done in the system to  
8 ensure safety, is that right?

9                   SERGIO MAMMOLITI: Right. I think on  
10 this one they called it an "Engineering Safety  
11 and Assurance Case", ESAC is the acronym. I  
12 think it's in one of the references in the  
13 umbrella document that covers everything, track,  
14 energy, signaling and so on.

15                  EMILY YOUNG: And would it have been  
16 the contractor, RTG, who would have prepared  
17 that?

18                  SERGIO MAMMOLITI: Correct, yes.

19                  EMILY YOUNG: And we've talked about  
20 some of the documents reviewed. Are there any  
21 other key documents that you would have reviewed  
22 in coming to your conclusions?

23                  SERGIO MAMMOLITI: Well, so that's the  
24 umbrella document that ESAC, that I talked  
25 about. I mean, I think it had something like

1 300 references in it. Now, we didn't look at  
2 all of them, of course, because we're auditing  
3 right? We're not the independent verifier. So,  
4 yeah, we would have seen some of them through  
5 various points. I mean, they're all listed in  
6 the audit report, the documents we looked at.

7 EMILY YOUNG: On that page with the  
8 references?

9 SERGIO MAMMOLITI: Yeah, section 1.3 I  
10 think it is, there it is.

11 EMILY YOUNG: And in this project, I  
12 would imagine the answer is yes, but did you  
13 complete all of the tasks that were set out in  
14 the safety audit plan you created?

15 SERGIO MAMMOLITI: Yes.

16 EMILY YOUNG: And these tasks and the  
17 process in this Ottawa project, they're the kind  
18 that you would typically complete in your  
19 engagement as a safety auditor?

20 SERGIO MAMMOLITI: Sorry, say that  
21 again.

22 EMILY YOUNG: I'm just asking whether  
23 the process followed here, was it sort of  
24 typical or standard of this kind of work?

25 SERGIO MAMMOLITI: Yes, fairly

1 typical, yes.

2 EMILY YOUNG: Was there anything that  
3 struck you as different or unusual about the  
4 work that you did for Ottawa?

5 SERGIO MAMMOLITI: That I did?

6 EMILY YOUNG: Yeah. Or anything you  
7 noticed about the project, I guess, we'd be  
8 interested in?

9 SERGIO MAMMOLITI: None of these  
10 projects go according to plan so. Yes,  
11 everybody has something different going on.

12 EMILY YOUNG: And for you as the  
13 safety auditor did any aspects not go according  
14 to plan?

15 SERGIO MAMMOLITI: On the safety side  
16 of things?

17 EMILY YOUNG: Uhm-hmm.

18 SERGIO MAMMOLITI: So the safety  
19 requirements that they defined at the beginning  
20 they were -- no, they did that at the beginning,  
21 that was right.

22 I'm trying to recall. I remember the  
23 first version of the audit report we said that  
24 the safety requirements weren't followed  
25 through, or something like that. There wasn't

1 evidence that they would have -- that they  
2 implemented that.

3 And that's not to say they didn't,  
4 right? What I'm saying is that when we went to  
5 go review the safety requirements in the first  
6 rev of this audit report there was no evidence  
7 of how it was rolled into the design and such.  
8 And again that's in 2017, that evidence didn't  
9 exist.

10 EMILY YOUNG: And we can talk a little  
11 bit more in detail about the revisions of your  
12 report later so that might jog your memory a  
13 little bit and we can come back to that question  
14 a bit later.

15 So, generally, do the safety  
16 requirement in the PA -- it sounds like in some  
17 respects they do go to the reliability of the  
18 system?

19 SERGIO MAMMOLITI: I'm sorry, the  
20 requirements in the PA go to the reliability?  
21 I'm not sure what you mean by that?

22 There are reliability requirements in  
23 there, in the Project Agreement. It has to have  
24 a certain availability or reliability rate, yes.  
25 Typically. I can't recall if this one had it.

1 Sometimes they do, sometimes they don't.

2 EMILY YOUNG: So the question is more  
3 so, do any of those reliability requirements  
4 from the PA also get on to your safety list?

5 SERGIO MAMMOLITI: Oh, no. No.  
6 That's a different realm, if you will. That's  
7 more about predicting how many breakdowns  
8 there's going to be, how many spare parts they  
9 will need. No, that wasn't part of our  
10 agreement here.

11 EMILY YOUNG: And I think you've sort  
12 of explained how they can interact in another  
13 sense earlier when you talked about certain  
14 safety aspects of the system, interact with  
15 reliability in the sense that, you know, for  
16 example, brakes. If brakes aren't working  
17 reliably --

18 SERGIO MAMMOLITI: Right.

19 EMILY YOUNG: -- that's a safety  
20 issue.

21 SERGIO MAMMOLITI: Yeah, it's bad.

22 EMILY YOUNG: But that kind of thing  
23 would be listed in your safety requirements?

24 SERGIO MAMMOLITI: Yeah. And so  
25 generally -- let's stick with the brakes

1 example. Yeah, that -- you would need some  
2 evidence from the supplier of that, that it is  
3 meeting its reliability targets and there's  
4 predictions to do that.

5 I mean, we didn't get into that.  
6 That's a couple of levels removed from us,  
7 right? Because we're looking at the summary  
8 reports and things like that. It's typical that  
9 the supplier would have that information.

10 EMILY YOUNG: If you had seen  
11 something in the reports about poor brake  
12 reliability I'm sure you would have paid  
13 attention to it?

14 SERGIO MAMMOLITI: Yeah, exactly.  
15 Yes.

16 EMILY YOUNG: And so you weren't  
17 really looking at the reliability requirements  
18 in the Project Agreement?

19 SERGIO MAMMOLITI: No.

20 EMILY YOUNG: Would you have been  
21 looking at something like integration testing in  
22 your work?

23 SERGIO MAMMOLITI: That's the higher  
24 level testing. Those are the kind of reports --  
25 integration -- or reports that -- so there's



1 different levels, if you will. So there's a  
2 railroad level and then what they call "primary  
3 systems". So the railroad level is the OLRT,  
4 the Ottawa Light Rapid Transit. It's the entire  
5 operations, the control centre, the vehicles,  
6 the signaling, the stations, all of it, the  
7 track.

8 And then the primary systems are  
9 exacted out, those pieces that make it up, the  
10 operation centre, the track, the signaling  
11 system, the stations, and so on. So yeah, we  
12 were on that upper level of railroad as a whole,  
13 how does it hang together?

14 EMILY YOUNG: And, sorry, does that  
15 mean that you -- what level is the integration  
16 testing at?

17 SERGIO MAMMOLITI: So the integration  
18 of those primary systems is what makes the  
19 railroad, so it's that level.

20 EMILY YOUNG: So integration testing  
21 is something you would have been looking at then  
22 in your reviews?

23 SERGIO MAMMOLITI: No. We would  
24 have -- I think they have a requirement to  
25 report, is how it came to us. I don't think we

1 saw the integration testing itself.

2 EMILY YOUNG: So you would have more  
3 so seen a report about the system, The system is  
4 integrated, or something like that?

5 SERGIO MAMMOLITI: Well, even less so  
6 than that. So if you look at reference 16 in  
7 rev 5 it's the PA technical compliance report.  
8 So that report would have shown the technical  
9 requirements, and those technical requirements  
10 would have pointed at some report. So that --  
11 so we're a level removed, if you will, from  
12 those kind of things.

13 EMILY YOUNG: And would you be looking  
14 at things like the criteria used for testing and  
15 commissioning or trial running?

16 SERGIO MAMMOLITI: I'm not sure what  
17 you mean. The criteria?

18 EMILY YOUNG: Would you have any role  
19 in setting those criteria and making suggestions  
20 about what they should be to ensure safety?

21 SERGIO MAMMOLITI: No. No, no,  
22 because that would compromise my role as  
23 auditor. I can't tell them what to do. I can  
24 only tell them if they're compliant with the  
25 standard or not.

1           EMILY YOUNG: So the standards, again,  
2 those are in the Project Agreement. So you  
3 just -- you leave those as they are?

4           SERGIO MAMMOLITI: Yes. Yes.

5           EMILY YOUNG: So I gather from our  
6 conversation so far that you've got the fifth  
7 revision of your report in front of you.

8           SERGIO MAMMOLITI: Uhm-hmm.

9           EMILY YOUNG: Do you also have the  
10 first revision?

11          SERGIO MAMMOLITI: Yeah, I do. Would  
12 you like me to look at it?

13          EMILY YOUNG: I just want to ask you  
14 just to confirm that you sent it originally to  
15 Richard Holder on November 22nd, 2017?

16          SERGIO MAMMOLITI: Yes, exactly.

17          EMILY YOUNG: And they wanted the --  
18 they, the City, wanted you to prepare the report  
19 at that time because that fell essentially six  
20 months before the planned revenue service  
21 availability date?

22          SERGIO MAMMOLITI: Correct.

23          EMILY YOUNG: And so to prepare this  
24 report would you have followed the steps that  
25 you described to us earlier?

1                   SERGIO MAMMOLITI: Yeah. And in fact  
2 I believe the report is structured the same way  
3 with the same sections in section 2, it's  
4 structured the same way.

5                   EMILY YOUNG: Did you remember that a  
6 firm named SEMP was also engaged by the City to  
7 perform a systems engineering and assurance  
8 health check around November 2017?

9                   SERGIO MAMMOLITI: Yes.

10                  EMILY YOUNG: And our understanding  
11 was that this was requested by TUV, is that what  
12 you recall?

13                  SERGIO MAMMOLITI: Oh, no, not at all.  
14 That was not requested by us. I think it's one  
15 of our references but we didn't initiate that.

16                  EMILY YOUNG: I think it may actually  
17 suggest in the SEMP report itself that the  
18 safety auditor had sort of sought that this be  
19 performed, but I'm not sure that -- that's okay.  
20 We'll move on.

21                  SERGIO MAMMOLITI: No. I'm -- we  
22 didn't ask them to come there.

23                  EMILY YOUNG: What was your  
24 understanding of why SEMP was asked to perform  
25 this health check?

1                   SERGIO MAMMOLITI: Oh, good question.  
2 I'm not even certain who asked them. I don't  
3 know, I honestly don't know. I don't know if it  
4 was the City or whether it was RTG that got them  
5 on board. I don't know.

6                   EMILY YOUNG: Fair enough. And at  
7 that time were you aware of any concerns about  
8 the things that SEMP was looking at, systems  
9 integration, engineering and assurance?

10                  SERGIO MAMMOLITI: Back in 2017?

11                  EMILY YOUNG: Uhm-hmm, yes.

12                  SERGIO MAMMOLITI: No. No. It was  
13 way too early for that. I don't even think they  
14 had all the vehicles at that point.

15                  EMILY YOUNG: Do you remember what the  
16 results of the SEMP health check were?

17                  SERGIO MAMMOLITI: No, not really.  
18 I'd have to look.

19                  EMILY YOUNG: Well, if you give me a  
20 moment I can pull it up because it might be  
21 helpful to have a look. So I have it here, the  
22 doc ID is COW0438535, and you can see that it's  
23 dated November 2017.

24                  KEVIN JOHNSON: This is Kevin Johnson.  
25 Have you sent us this document?

1                   EMILY YOUNG: No. I don't think we  
2 have.

3                   KEVIN JOHNSON: Can we take time to  
4 review the document? Unless you have a specific  
5 question and then we can review the document  
6 afterwards.

7                   EMILY YOUNG: Okay. I just wanted to  
8 go to the executive summary and just essentially  
9 look at this, the paragraph here that summarizes  
10 the results of the analysis. Is that okay?

11                  SERGIO MAMMOLITI: Okay.

12                  EMILY YOUNG: So what they have said  
13 is:

14                                 "Summarizing the level of system  
15 engineering on the project to date is  
16 considered to be substantially below  
17 the minimum acceptable level for a  
18 project of this size and complexly."

19                                 And they identified a significantly  
20 increased integration risk on the project. So  
21 my question is whether this conclusion is  
22 something that you would have considered at this  
23 stage in your first report as safety auditor?

24                  SERGIO MAMMOLITI: Oh yeah, yeah. In  
25 fact we reference this as part of the

1 substantiation of your review.

2           Yeah, our report to the City was --  
3 and as I said, the big thing about rev 1 is that  
4 we didn't see the requirements flowing down. So  
5 we can't validate integration because we don't  
6 know that you've passed the requirements on  
7 properly. It's kind of a necessary first step.  
8 And I think we did quote this as -- in our  
9 references. It's reference 9 in rev 1. Sorry,  
10 I'm quoting the draft version here.

11           Rev 1 draft, is that what you have on  
12 there?

13           EMILY YOUNG: Of the SEMP report?

14           SERGIO MAMMOLITI: Yeah. I'm looking  
15 at reference 9 in my rev 1 of my audit report  
16 from 2017. And the SEMP report you've got on  
17 screen, I've got rev 1 draft on my reference  
18 list.

19           EMILY YOUNG: It does have a "Draft"  
20 watermark.

21           SERGIO MAMMOLITI: Oh, yeah, that's  
22 probably why. Okay, yeah. The document number  
23 matches. Rev 1, that's probably the same one.

24           EMILY YOUNG: And at this stage of the  
25 project would this have been something that

1 would be of concern? The SEMP conclusion that  
2 the system engineering was substantially below  
3 the acceptable level?

4 SERGIO MAMMOLITI: Oh, well, yes, of  
5 course. I mean, I don't think I needed this  
6 report to tell me that. Like I said, the safety  
7 requirements didn't seem to be traced through  
8 properly. This just substantiated it as well,  
9 right.

10 EMILY YOUNG: And was the fact that  
11 the requirements hadn't been traced through, was  
12 that surprising to you at this stage?

13 SERGIO MAMMOLITI: It's -- yeah, it  
14 was a bit late in the game to be doing that,  
15 yes.

16 EMILY YOUNG: When would that normally  
17 be done?

18 SERGIO MAMMOLITI: Oh, gee, so again,  
19 this is -- there's not a hard and fast line on  
20 this because there's so many pieces and parts.  
21 Like the -- in a project like this the civil  
22 works start first so those requirements start  
23 first, and the satisfaction of them comes first.  
24 Because there's -- there's not a hard timeline  
25 on these sort of things.



1           The integration requirements, for  
2           example, are the last things to get verified and  
3           even developed because things are changing as  
4           the project comes along, right?

5           But, no, I do recall that and I think  
6           we even said this in the report. Yeah, yeah,  
7           task two:

8                         "There's no evidence to indicate  
9                         the safety requirements of the Project  
10                        Agreement have been identified and  
11                        expanded upon to a level that is  
12                        sufficient for their allocation to  
13                        applicable subsystems of the OLRT."

14           EMILY YOUNG: And are you reading  
15           from -- sorry, I have a version of what I  
16           understand is a first revision of your report on  
17           the screen here.

18           SERGIO MAMMOLITI: Yeah.

19           EMILY YOUNG: Am I looking at the same  
20           document?

21           SERGIO MAMMOLITI: I believe so. Go  
22           to section 2.1. Yeah, it's the red line  
23           paragraph there that I just read you, the first  
24           sentence in there.

25           EMILY YOUNG: And just for the record,

1 the document ID that we have for this first  
2 revision of the report is COM0002085.

3 We understand, Mr. Mammoliti, that  
4 after SEMP delivered this report that there was  
5 some kind of workshop that was held at which the  
6 report was discussed and maybe other things were  
7 discussed as well. Do you recall that?

8 SERGIO MAMMOLITI: Yes.

9 EMILY YOUNG: And were you leading  
10 that workshop?

11 SERGIO MAMMOLITI: No, I was a  
12 participant.

13 EMILY YOUNG: Do you recall who  
14 attended the workshop?

15 SERGIO MAMMOLITI: Oh heavens, no. It  
16 was a cast of thousands, as I recall.

17 EMILY YOUNG: So would there have been  
18 individuals from both sides of the project,  
19 let's say, from the contractor and from the  
20 City?

21 SERGIO MAMMOLITI: Oh, I honestly  
22 don't remember who was there. I would be  
23 surprised if the City wasn't there. I don't  
24 know. That was a while ago. That was 2017.  
25 I'm not sure.

1                   EMILY YOUNG: And I think what we saw  
2 was that the workshop ran from November 15th to  
3 17th. Does that sound right to you?

4                   SERGIO MAMMOLITI: Yeah, I think  
5 that's right.

6                   EMILY YOUNG: And do you recall what  
7 the purpose of the workshop was?

8                   SERGIO MAMMOLITI: Basically, as I  
9 recall, it was where do we go from here, kind of  
10 thing. There were so many meetings on this  
11 project I'm probably blurring them together. I  
12 think it was more about strategizing how to  
13 recover.

14                   Like I said, the target, the original  
15 date was supposed to be May 2018 and it finally  
16 opened in September 2019 I believe.

17                   EMILY YOUNG: That's right.

18                   SERGIO MAMMOLITI: Just after my final  
19 report. So, yeah, I think it was strategizing  
20 on how to recover from where they were.

21                   EMILY YOUNG: And when you say  
22 "recover", you mean recover from the delays?

23                   SERGIO MAMMOLITI: No, no. Oh gee,  
24 no. There was a number of construction delays,  
25 that's not what we were concerned with. I think

1 they had a tunnel collapse at one point, but  
2 that way predates my time there. No, no, it  
3 wasn't about that.

4           It was more about, okay, you're  
5 missing the requirements and the trace through.  
6 What are you going to do now? How are you going  
7 to -- it was a number of things, it wasn't just  
8 the safety. There was a broader systems  
9 engineering scope. And that's what I thought  
10 SEMP was brought in to do, to help RTG with  
11 that.

12           EMILY YOUNG: And so were you involved  
13 on the safety piece?

14           SERGIO MAMMOLITI: Just as the  
15 auditor. I'm trying to ensure that they're  
16 complying with what's dictated in the standards,  
17 the Project Agreement, right? So it's -- again,  
18 I have to be -- I'm always careful when I'm in  
19 this role of -- I can't dictate what to do  
20 because then I end up auditing my own work,  
21 right? That's a no-no.

22           EMILY YOUNG: Can you recall what sort  
23 of contributions you might have made to the  
24 workshop, if any?

25           SERGIO MAMMOLITI: No, I think I was a

1 silent observer there. Just to -- well, I was  
2 invited because the -- they wanted to avoid  
3 the -- here's another document, read this, and  
4 me asking a bunch of questions. Just sit and  
5 listen and be part of the conversation so I know  
6 where they're going.

7           Given the timelines it was just more  
8 efficient to have me in the meeting just  
9 listening and being aware of what was happening.  
10 I think that was the -- that was the spirit of  
11 it. That was the spirit of a lot of the  
12 meetings I was invited to actually, to keep me  
13 in the loop kind of thing.

14           EMILY YOUNG: And would it have been  
15 acceptable for you to make contributions to  
16 those types of meetings where you're, I guess,  
17 identifying the deficiencies you've seen and  
18 making comments on that?

19           SERGIO MAMMOLITI: Yeah, yeah. I can  
20 say, That's not really according to process, it  
21 says this. But that's where I stop. I can't  
22 tell them, And then you should do this.

23           EMILY YOUNG: And if they --

24           SERGIO MAMMOLITI: I'm there to, This  
25 is the spirit of the requirement. This is what

1 it's trying to say. How you choose to implement  
2 that is up to you, or achieve that, I should  
3 say.

4 EMILY YOUNG: And if they were to make  
5 a suggestion to you, We're thinking of doing X  
6 to achieve this requirement. Would you be able  
7 to make a comment about, That sounds good, or,  
8 That might be compliant. Or would you just sort  
9 of keep your mouth shut at that point?

10 SERGIO MAMMOLITI: Well, no, no. So  
11 if I thought it was going against the spirit of  
12 the requirements, or the industry practice I  
13 would say -- I would -- again, this is  
14 hypothetical, I would come up with a, Yeah, but  
15 what about this part of it? Or, Yeah, but when  
16 you get to this part of the project what are you  
17 going to do? Because if you do that how do you  
18 plan on addressing this requirement later on at  
19 a later phase? So that kind of thing. I would  
20 ask questions about, How are you going to make  
21 this happen? But again, I have to be very  
22 careful not to tell them what to do.

23 EMILY YOUNG: So you're asking  
24 questions to sort of test their proposed  
25 solutions and make suggestions about how you

1 might see it not complying with the  
2 requirements?

3           SERGIO MAMMOLITI: Well, more to the  
4 point why I'm asking those questions is, the  
5 later phases in the report where I'm looking for  
6 evidence of this, that and the other thing. I'm  
7 trying to figure out, well, where am I going to  
8 see this? I'm thinking of the end goal. So if  
9 you're going to do that then what should I be  
10 looking for in the later phases? That was more  
11 of the gist of my questions and roles in that  
12 sense. But it does line up with what standards  
13 and best practice of the industry say.

14           EMILY YOUNG: Okay.

15           CHRISTINE MAINVILLE: If I could just  
16 jump in. I think the -- well, first of all, I  
17 wanted to identify the first revision we've been  
18 discussing. I'm not sure we put the number on  
19 the record COM2085.

20           And just in the interest of time we'll  
21 want to get to your second revision and the  
22 things that followed. Can you please tell us  
23 just generally how, in terms of the various  
24 revisions and the timelines, I take it from your  
25 answer that at the first revision pretty much

1 the bottom line is very little was done. It was  
2 not ready for you. So you then go on to --

3 SERGIO MAMMOLITI: Right.

4 CHRISTINE MAINVILLE: -- the second  
5 revision, but that is very shortly thereafter.  
6 So if you could just speak to that and the state  
7 of readiness in terms of when you're able to  
8 actually start looking at something concrete?

9 SERGIO MAMMOLITI: Yeah, I'm trying to  
10 figure that out because this is two days later.

11 EMILY YOUNG: Yeah, that's what we  
12 have.

13 SERGIO MAMMOLITI: So that's revision  
14 1. I've updated something in there because it's  
15 only two days later. I might have updated it  
16 for comments that I got.

17 Generally when I issue an audit report  
18 I let the audience review and correct and  
19 clarify. Kind of like what you did in the  
20 beginning, if you see something in there that  
21 you think is a misinterpretation I give them an  
22 opportunity to correct it.

23 I honestly don't know why I submitted  
24 this one so quickly afterward.

25 CHRISTINE MAINVILLE: So then just for



1 the record, the second revision is COM2083 dated  
2 November 24th, 2017. And the third one is  
3 October 30th, 2018, COM2072.

4 So maybe we can just jump forward in  
5 terms of what happened at that point. Because  
6 now you're past the original RSA date. So if  
7 you can give us an overview of what's happening  
8 at that timeframe, and then we'll start later in  
9 time.

10 KEVIN JOHNSON: Can you tell us what  
11 email it was sent under? That's the easiest way  
12 for us to locate it.

13 EMILY YOUNG: Sure. And -- yeah, just  
14 give me one moment and I can tell you.

15 KEVIN JOHNSON: Are you talking the  
16 November 29th email?

17 CHRISTINE MAINVILLE: No. I think  
18 we've skipped over that one and we're talking  
19 about November 24th, 2017, was the second  
20 revision we had.

21 And then October 30th, 2018, was, from  
22 our understanding, the next revision that you  
23 submitted.

24 KEVIN JOHNSON: I've got just -- can  
25 you -- can we pull up the document that you're

1 speaking of so that we can get a better idea?

2 Because --

3 EMILY YOUNG: Yes.

4 KEVIN JOHNSON: -- I thought revision  
5 2 was sent on November 29 at 11:29 p.m. and  
6 is -- let's see what you have.

7 SERGIO MAMMOLITI: Okay, yeah.

8 EMILY YOUNG: So the  
9 November 24th version is up on -- should be up  
10 on the screen now.

11 SERGIO MAMMOLITI: Yeah, I see it.

12 CHRISTINE MAINVILLE: Those are the  
13 details associated with it.

14 KEVIN JOHNSON: This one is still  
15 marked as revision 1.

16 CHRISTINE MAINVILLE: Okay. So what  
17 you did then was you had some changes to  
18 revision 1, and then you're saying you submitted  
19 revision 2 on November 29th?

20 SERGIO MAMMOLITI: Yeah, yeah. We  
21 did. Revision 2 is November 29th, yes.

22 CHRISTINE MAINVILLE: So then revision  
23 3 is still going to be October 30th, 2018?

24 SERGIO MAMMOLITI: Yes.

25 EMILY YOUNG: That's COM2072.

1 SERGIO MAMMOLITI: Okay, gotcha.

2 EMILY YOUNG: And I think  
3 Ms. Mainville was hoping you can provide a  
4 review of sort of what was going on between this  
5 time? What brought you to this revision in  
6 light of the fact that the first revenue service  
7 availability date was missed in the end?

8 SERGIO MAMMOLITI: I'm trying to  
9 remember now because they had a number of  
10 proposed revenue services dates. I think this  
11 one was -- basically I released a report when  
12 the City asked me for one. I can't remember why  
13 they asked me for this one.

14 EMILY YOUNG: Would it possibly have  
15 been because one of their targeted RSA dates was  
16 in November of 2018? Does that ring a bell?

17 SERGIO MAMMOLITI: Maybe. I think  
18 maybe. I thought the next one was in March of  
19 2019. There might have been one in November of  
20 2018.

21 EMILY YOUNG: I think you say on  
22 page 8 of this report that the RSA date is in  
23 November of 2018. Let's see.

24 SERGIO MAMMOLITI: Well, there's your  
25 answer then. Oh yeah, there it is.

1                   "Given the Stage 1 revenue at  
2                   this time of writing the [...]."  
3                   Yeah, yeah, yeah.

4                   EMILY YOUNG: So given that this was  
5                   happening so close to RSA, were your  
6                   instructions any different?

7                   SERGIO MAMMOLITI: No. No, no, no.  
8                   This City was very careful not to tell me what  
9                   to write. I would have had to report that too  
10                  had they tried to influence the audit.

11                  EMILY YOUNG: And can you remember  
12                  what had happened in the way of progress between  
13                  the first revision and this revision?

14                  SERGIO MAMMOLITI: Those SEMP guys you  
15                  were talking about were on board. They -- I  
16                  remember they had a flurry of people trying to  
17                  catch up on a bunch of these activities there.  
18                  But, again, I was on the City side. They  
19                  didn't -- I worked at arm's length from what was  
20                  happening there.

21                  There was a lot of things going on. I  
22                  can't remember what the state of readiness was  
23                  at that point. But, yeah, obviously it wasn't  
24                  ready because we didn't end up doing it until a  
25                  year later almost.

1                   EMILY YOUNG: I think that one of the  
2 major changes is that here on this page, on  
3 page 7, we see in the second paragraph under 2.1  
4 you've deleted the word "no", so now you're  
5 saying there is evidence to indicate --

6                   SERGIO MAMMOLITI: Oh yes, yes.  
7 Definitely, that certainly had happened by that  
8 point. I thought you meant the state of  
9 readiness of the vehicles, the stations, and  
10 things like that. Oh no, they had certainly  
11 done the safety requirement tracing at this  
12 point or, at least linking it down to the  
13 systems, yes.

14                   EMILY YOUNG: And it seems like there  
15 was still some work to be done, based on what  
16 you've written on this page, but there had been  
17 good progress at that point?

18                   SERGIO MAMMOLITI: Yes, yes, exactly.  
19 You see the compliance matrix shows  
20 up. The requirements traceability matrix shows  
21 up in this revision of the report. So, yeah,  
22 there was progress.

23                   EMILY YOUNG: And so in the first  
24 revision of your report you had noted that there  
25 was a significant risk that reworking of the

1 system would actually be needed to meet safety  
2 requirements, can you explain what you would  
3 have meant by that?

4 SERGIO MAMMOLITI: So just in a  
5 general systems engineering sense, if -- let's  
6 put the analogy, you're building a house but  
7 you're in a great rush to get it done, so you  
8 dig a hole first but it doesn't match the  
9 footprint of the house you want to build. So  
10 that's what I mean by "reworking". You don't  
11 lay out the requirements of, well, I need a hole  
12 this big and this deep because I want a two  
13 layer basement, or something like that.

14 That's the kind of risk -- by not  
15 identifying requirements early you run the risk  
16 of having to rework things later to make them  
17 fit and work together as a system. That's, in  
18 lay terms, what I meant.

19 EMILY YOUNG: And so would that  
20 reworking usually involve changes to the design  
21 aspects of the project?

22 SERGIO MAMMOLITI: It could be  
23 anything. It could be operating procedures, it  
24 could be design. There is an example there.  
25 There was a -- you know the overhead wires on

1 the streetcars and transit systems? There's a  
2 requirement that you have to be three metres  
3 away from it so that there's no touch potential.  
4 Some guy carrying a hockey stick in his backpack  
5 doesn't accidentally touch it, things like that.

6 There was something at one of the  
7 stations, I think it was Tunney's, where that  
8 was too close to an escalator so they put up a  
9 glass wall to separate that from any potential  
10 people touching it. So those kinds of things  
11 happen, right?

12 And that -- frankly that happens on  
13 every project. It doesn't -- there are no  
14 perfect projects. Things happen, right?

15 EMILY YOUNG: And so when we get to  
16 the third revision that we're looking at here,  
17 COM2072, I'm on page 8, what you've said here is  
18 that given that revenue service availability is  
19 slated to occur in November 2018:

20 "There's likely little  
21 opportunity to affect any design  
22 changes consequently leading to a  
23 potential overreliance on standard  
24 operating procedures to mitigate any  
25 newly identified safety requirements."

1                   Can you explain what you meant by  
2 that?

3                   SERGIO MAMMOLITI: So, again, we have  
4 what we call an order of precedence for  
5 addressing safety requirements. I think it's is  
6 in the APTA, American Public Transportation  
7 Association, I think that's the one that lays it  
8 out most clearly.

9                   But the first thing to do if you have  
10 a hazard in a particular design is eliminate it.  
11 Like hazardous chemicals, explosives, things  
12 like that, just get rid of them.

13                  The next thing is to mitigate it by  
14 design, automatic systems and design it out as  
15 best you can. You've got a noisy generator, put  
16 it in a soundproof room, things like that is by  
17 design.

18                  And the later you get in a project the  
19 less opportunity you have to do things like that  
20 and you end up in standard operating procedures.  
21 The noisy generator, for example, I can't put a  
22 building around it because there's no room. So  
23 now I have to write an operating procedure that  
24 you have to ear protection around it.

25                  So there's an order of precedence for



1 these things, and that's essentially what I'm  
2 saying. You're running out of time to build  
3 things into the system and you're going to end  
4 up having to write operating procedures instead.

5 EMILY YOUNG: Is it generally  
6 considered to be preferable to do the first  
7 order thing, remove it, and then the second  
8 order thing, design it out, over the third order  
9 thing?

10 SERGIO MAMMOLITI: I think there's a  
11 list of five or six, but, yeah, yeah, it's a  
12 pecking order. It's not always practical, but  
13 yeah, it's preferred.

14 And that's the thing, you want to --  
15 for those things that are practical you want to  
16 push them up into design and elimination and  
17 things like that.

18 I think warning devices is another  
19 one, like bells or flashing lights and things  
20 like that. But, yeah, that's the idea, is to  
21 move it away from reliance on humans to do the  
22 right thing.

23 EMILY YOUNG: And because you're  
24 relying more so on humans to do the right thing,  
25 is there a sense in which these types of changes

1 would be less safe?

2 SERGIO MAMMOLITI: I'm not sure I'm  
3 following. Sometimes there's no option, right?  
4 You have a train operator and that's as good as  
5 it gets. Does that answer your question? I'm  
6 not sure I really understood.

7 EMILY YOUNG: I guess the question is,  
8 is there more risk that remains when you're  
9 relying on standard operating procedures rather  
10 than the sort of more preferable ways of dealing  
11 with the risk?

12 SERGIO MAMMOLITI: Oh, yeah. Well,  
13 imagine trying to run a railroad with pencil and  
14 paper and not having signals and safety systems,  
15 and you need a Fred Flintstone type braking  
16 system where you put your feet on the ground and  
17 drag it. That relies on you having good shoes.  
18 Yeah, yeah, of course. I mean, I'm being  
19 facetious with these examples but, yeah, the  
20 more you rely on the human the worse it tends to  
21 be. But, again, we're not in The Jetsons yet.  
22 The practicality of some of these things you  
23 have to rely on people.

24 EMILY YOUNG: And would this have the  
25 effect of adding additional pressure on

1 operations and maintenance?

2 SERGIO MAMMOLITI: Yeah, ultimately.  
3 I mean taking the extreme example, of course.

4 EMILY YOUNG: So you would be relying  
5 more on OC Transpo, the operator, to implement  
6 standard operating procedures to make sure that,  
7 you know, the safety --

8 SERGIO MAMMOLITI: Right.

9 EMILY YOUNG: -- requirements are met?

10 SERGIO MAMMOLITI: Yeah. Yes. If you  
11 badly design a system that could be the case,  
12 yes.

13 EMILY YOUNG: So in that case it would  
14 probably be even more important that they have  
15 proper training, proper oversight?

16 SERGIO MAMMOLITI: Yeah, that's always  
17 important. But it's the volume really more than  
18 anything else.

19 EMILY YOUNG: And so in this revision,  
20 the third revision, you found that there's more  
21 evidence to show that the requirements are being  
22 applied to the system. But it looks like you  
23 still had concerns about the contractor's safety  
24 plan. Do you remember that?

25 SERGIO MAMMOLITI: No, I don't

1 actually. They must have corrected it. I  
2 wouldn't have signed it in the end.

3 EMILY YOUNG: If you go to page 10 of  
4 the report we see you saying:

5 "Consequently there is  
6 insufficient evidence to support the  
7 assertion that the Safety Plan is  
8 comprehensive in its approach."?

9 SERGIO MAMMOLITI: Yeah, that's not  
10 changed though, that's not red-lined at all in  
11 this version.

12 EMILY YOUNG: Was that a concern for  
13 you at this stage in the project?

14 SERGIO MAMMOLITI: Yeah, it would have  
15 been. Obviously I wrote it that way so, yes.

16 EMILY YOUNG: And what would be the  
17 risks or implications of this at this stage?

18 SERGIO MAMMOLITI: I'm just reading  
19 this again now.

20 [Witness reading the document.]

21 Okay, so they've moved to that  
22 risk-based approach here. Yeah, that's why.  
23 Yeah. During the course of the safety program  
24 other artifacts may also be required. Yeah,  
25 because they moved to a risk-based approach, so

1 it's like a triage where you have a set of goals  
2 and -- yeah. So that was it, as I recall.

3 EMILY YOUNG: So that was the reason  
4 for the delay on the safety plan?

5 SERGIO MAMMOLITI: Just looking at the  
6 paragraph before.

7 [Witness reading the document.]

8 That's right. They hadn't finished  
9 the preliminary hazard analysis at this point.  
10 So not so much the safety plan itself but the  
11 execution of it.

12 EMILY YOUNG: And the reason for that  
13 was because they had shifted their approach to a  
14 risk-based approach, you were saying?

15 SERGIO MAMMOLITI: Well, that doesn't  
16 change the -- so if you read the previous  
17 paragraph, the last paragraph on page 9:

18 "The approach presented in the  
19 safety plan is remiss [...] to  
20 systemically identify hazards  
21 associated with the railroad."

22 Now, normally you do that with a  
23 preliminary hazard analysis and that was not  
24 complete at this time. And then the next  
25 statement:

1                    "This, in turn, impact the  
2                    derivation of safety  
3                    requirements [...]."

4                    That's the front-end work I told you  
5                    about. Here's the functions of the system,  
6                    here's the things that are -- if that function  
7                    fails, things go wrong. And I think we were  
8                    still questioning the completeness of the hazard  
9                    analysis at that point. Just give me a second.  
10                   I know in the end they used -- no, they hadn't  
11                   done that yet here.

12                   So in the end they did address this.  
13                   They haven't -- if you look at rev 5 there's  
14                   another reference in there that talks about RSFV  
15                   and the hazards associated with that, that's how  
16                   they finally addressed this. But, yeah, at this  
17                   time they hadn't done that yet.

18                   EMILY YOUNG: And this is occurring,  
19                   it sounds, quite late?

20                   SERGIO MAMMOLITI: Yes.

21                   EMILY YOUNG: Is there any reason to  
22                   be concerned about them rushing given the late  
23                   stage of the project?

24                   SERGIO MAMMOLITI: That's my job. I  
25                   don't make the train go, I make the train stop.

1 So that's kind of the point of having the safety  
2 auditor and the independence from the supplier.  
3 So that we can say, whoa, whoa, whoa, this  
4 doesn't make sense. And, in fact, that is what  
5 my report says, this ain't quite there yet.

6 EMILY YOUNG: Were you concerned at  
7 this point that it wasn't there and that because  
8 they were trying to apparently get things done  
9 in November they were going to try to rush and  
10 get it done?

11 SERGIO MAMMOLITI: It wasn't so much  
12 that, it was that the traceability -- again,  
13 safety is about completeness and correctness.  
14 So, did you identify all the hazards? That's  
15 the completeness argument, and that's what they  
16 haven't demonstrated yet.

17 Everything they found they were  
18 tracking through and there was, you know,  
19 various states of progress on that. But they  
20 couldn't tell me whether they had done a  
21 comprehensive review of functions and hazard  
22 identification. Again, when you get to rev 5  
23 you see that they did do that, but at this stage  
24 they -- I wasn't convinced, that's why the  
25 report is written this way. It's not to say

1 there was something wrong, it's just I wasn't  
2 convinced.

3 EMILY YOUNG: So they were still  
4 working on completeness, they hadn't made it to  
5 correctness?

6 SERGIO MAMMOLITI: No, no, there were  
7 aspects of correctness that were already there  
8 as well, but they hadn't convinced me, let's put  
9 it that way.

10 EMILY YOUNG: And at this point did  
11 you think that a revenue service availability  
12 date in November of 2018 was attainable?

13 SERGIO MAMMOLITI: No, not a chance.  
14 It was -- no.

15 EMILY YOUNG: And did you -- would you  
16 have conveyed this to the City by any other  
17 means than sort of the implications that you're  
18 saying in your report?

19 SERGIO MAMMOLITI: I'm sure we would  
20 have discussed this leading up to it. I don't  
21 think they had all the vehicles even ready at  
22 this point. In fact I'm certain they didn't.  
23 They didn't have them ready until almost the  
24 last day in 2019. I wasn't telling them  
25 anything they didn't know, let's put it that



1 way.

2           EMILY YOUNG: And in terms of the next  
3 revision of your report, what we have is that  
4 you submitted that on April 3, 2019, and the  
5 document is COM2069, is that your understanding  
6 as well?

7           SERGIO MAMMOLITI: Sorry, April 3rd,  
8 2019?

9           EMILY YOUNG: Yes.

10          SERGIO MAMMOLITI: Yes.

11          EMILY YOUNG: And was there any change  
12 in your approach to the work, or the scope of  
13 your assignment before you completed this  
14 revision?

15          SERGIO MAMMOLITI: No, not in the  
16 scope I don't believe.

17          EMILY YOUNG: And were you given new  
18 timelines for this one?

19          SERGIO MAMMOLITI: I think they were  
20 aiming for May at this point. I think it was  
21 May.

22          EMILY YOUNG: I'm not sure that you  
23 mentioned that in the text of this report.

24          SERGIO MAMMOLITI: I thought there was  
25 a May date. I thought there was a March one

1 before this too, but obviously they kiboshed  
2 that. I don't think I remember a date. It  
3 might have been the end of April. It might have  
4 been April or May they were looking at.

5 EMILY YOUNG: Do you remember what  
6 changes would have occurred between the third  
7 revision and this revision?

8 SERGIO MAMMOLITI: Well, for example,  
9 there would -- they have done more of the  
10 traceability. If you go to page 12, for  
11 example. Yeah, that lovely graph. That's what  
12 they call their "hazard burn-down rate", those  
13 are week numbers at the bottom and they're  
14 showing progress there, what's open, what's  
15 resolved and closed, and so on. So you can see  
16 the progress there.

17 And now I'm seeing the evidence of  
18 this stuff getting resolved and properly  
19 managed. So yeah, yeah, there's definitely a  
20 marked improvement at this point.

21 EMILY YOUNG: And does burning down a  
22 hazard, would that mean that they have a system  
23 in place to deal with it? What does that mean?

24 SERGIO MAMMOLITI: So hazards have --  
25 so when you identify a requirement and

1 mitigation where it's, you know, this kind of  
2 thing has to happen. You have to move smoke out  
3 of the tunnel, for example, to improve  
4 survivability. What they're showing along the  
5 bottom there, the colours, are the states of  
6 those identified hazards. So you can see by the  
7 graph there's about 350 of them that they've  
8 identified, and those hazard drive the safety  
9 requirements.

10 So the open, the reds you see very  
11 early on, are the -- we've identified them but  
12 we don't know where they're going. The next  
13 colour, the yellows, are the resolved. The next  
14 colour, the green, is closure pending, so they  
15 have some evidence but they haven't confirmed  
16 it. And then so on and so forth, managed and  
17 finally closed. "Transferred" are the operating  
18 proceeding things. So you transfer that to  
19 somebody else's responsibility. And -- well the  
20 duplicate is a duplicate of another one and you  
21 don't need two.

22 EMILY YOUNG: So basically --

23 SERGIO MAMMOLITI: And again -- go  
24 ahead.

25 EMILY YOUNG: I just wanted to confirm

1 my understanding that what you're looking for is  
2 that a hazard has been adequately managed?

3 SERGIO MAMMOLITI: Correct, and you  
4 can see that graphically here. Those are week  
5 numbers on the bottom, by the way. I think that  
6 28 was week 28 in 2018 and -- yeah, that makes  
7 sense given the date of this. And week 1 is  
8 week 1, 2019, or -- yeah, 2019, that's right.  
9 So you can graphically see, and that's why I've  
10 included it here, that they've made substantial  
11 progress.

12 EMILY YOUNG: And were there any other  
13 notable changes?

14 SERGIO MAMMOLITI: Well, if you go  
15 back to the reference list on this document you  
16 can see that they were starting to produce much  
17 more evidence at this point.

18 Hang on, let me back up. A  
19 revision -- yeah, they're definitely making  
20 progress and getting things done.

21 EMILY YOUNG: And you noted in this  
22 report that there was still the risk that  
23 mitigations would be addressed through an  
24 overreliance on standard operating procedures,  
25 do you remember that?

1                   SERGIO MAMMOLITI: Yes. I still  
2 wasn't convinced that -- and that's just because  
3 some of the hazard were still not managed. It  
4 was certainly better than the first revision of  
5 the report, but, yeah, we weren't clear.

6                   You don't see it in rev 4, but in rev  
7 5 there's what they call an "ORD", operation  
8 restrictions document, or something like that.  
9 And that's where they finally catalogue what  
10 those -- and there's an operator safety case in  
11 rev 5 as well where they covered that. None of  
12 those were available here in rev 4. So that's  
13 why I said what I said, because there was no  
14 evidence that they made an assessment of that.

15                   Again, it's not to say that they  
16 didn't, it's just that they hadn't provided  
17 evidence to substantiate that for my report.

18                   EMILY YOUNG: And just going back to  
19 the issue of overreliance on standard operating  
20 procedures, would that ever be a reason for  
21 finding that a system is not passenger ready?  
22 That there's too much reliance on standard  
23 operating procedures?

24                   SERGIO MAMMOLITI: In theory, yes. In  
25 practice I've never seen it happen. But -- oh

1     yeah, that would be catastrophic, that's  
2     basically a tear down and rebuild it. So we  
3     would have all been remiss had we let it get  
4     this far and without a sense that that was going  
5     to happen.

6             EMILY YOUNG: So it was possible to  
7     rely heavily on standard operating procedures  
8     but do it in a way that was still safe?

9             SERGIO MAMMOLITI: Well, every  
10    railroad does that now, right? There's a legal  
11    requirement inspect your vehicles every 92 days,  
12    that's clearly a standard operating procedure  
13    and it happens, right. It just it is what it  
14    is. There's only so much automation that you  
15    can put on these things, right.

16            EMILY YOUNG: Let's take our break  
17    now.

18            -- RECESSED AT 10:49 A.M. --

19            -- RESUMED AT 11:00 A.M. --

20            EMILY YOUNG: So in this revision, and  
21    maybe in the previous revision, and just to  
22    remind you we're looking at the fourth one right  
23    now, COM2069. You had noted that OLRTC adopted  
24    a risk-based assurance methodology and --

25            SERGIO MAMMOLITI: Right.

1                   EMILY YOUNG: -- that this was a  
2 change from their previous approach?

3                   SERGIO MAMMOLITI: Yeah. So that  
4 was -- one of the references there I think was  
5 the document tree. So this -- we were  
6 sufficiently advanced in the state of the  
7 project at that point, or RTG was, I should say,  
8 that it doesn't make sense to go do a  
9 preliminary version of a document that you would  
10 normally do in Phase 2 or 3, only to do the  
11 final version in phase 6, where we are now. So  
12 that's kind of what the risk-based approach was.  
13 If you didn't do all of the stuff up front  
14 but -- think of it as triaging. Here's the  
15 stuff we actually need so that at the end of the  
16 day we can hang our hat on this and say, Yeah,  
17 it's good goods. That's, in a nutshell, what  
18 that means.

19                   To go back and follow the standards,  
20 and all these things to the letter, is not  
21 fruitful. You're producing paper for the sake  
22 of paper when you know there's going to be a  
23 follow-on version of it. That is, in essence,  
24 what this was about.

25                   EMILY YOUNG: Did you have any

1 concerns about changing the approach to the  
2 risk-based approach?

3 SERGIO MAMMOLITI: Oh, yes. That was  
4 part of that -- they proposed that back in that  
5 engineering working group session we talked  
6 about in November 2017, or whatever. They  
7 talked about doing that and I was like, you're  
8 going to have to convince me here. And  
9 that's -- again, I can't tell them what to do,  
10 but, yeah, but what about later?

11 Again, this is why they were keeping  
12 us in the loop and trying to minimize the time  
13 to get this thing into service.

14 I had no problem telling them that I  
15 thought they were going south, or if they  
16 weren't going to hit this mark and such.

17 EMILY YOUNG: And in the end what  
18 alleviated those concerns for you?

19 SERGIO MAMMOLITI: Well, progress.  
20 That graph that I just showed you, for example.  
21 They were generating these things on a weekly  
22 basis. Remember I'm auditing, right? Show me.  
23 I'm from Missouri, the show me State. You say  
24 you're doing this but do you have any evidence?  
25 And that's -- so the confidence level is going



1 up here because they are producing graphs like  
2 this and more evidence to demonstrate that  
3 they're in compliance.

4 EMILY YOUNG: So it sounds like the  
5 concerns were less about the actual switch to  
6 the risk-based approach and more just about can  
7 they get it done?

8 SERGIO MAMMOLITI: Yup. Exactly.

9 EMILY YOUNG: Okay.

10 SERGIO MAMMOLITI: And remember this  
11 one came out in April, and I thought there was  
12 some plans to try and get it into revenue  
13 service in May, or something like that. Which,  
14 yeah, you've made excellent -- and I think I  
15 said something along those lines, they made good  
16 progress but they are not quite there yet.

17 EMILY YOUNG: So for the next  
18 revision, which was your fifth, were you sort of  
19 retained separately each time you were doing a  
20 new revision or was that something that was  
21 expected from the start?

22 SERGIO MAMMOLITI: No, expected from  
23 the start. When they told us, Hey, we want you  
24 to come in and do a paper exercise because we  
25 are going to open in May of 2018, we expected to

1 walk in and just see everything as like, Yeah,  
2 okay, did you follow the standard? Here's your  
3 report for November. We're good to go. Have a  
4 great time.

5 So there was some contract extensions.  
6 And, you know, when we first did the estimate we  
7 thought we'd be done by -- mostly by November  
8 and then just watch them towards the end of May,  
9 given it wasn't May of 2018. But there were  
10 extensions to the work but no change in scope,  
11 as I recall.

12 EMILY YOUNG: And do you recall having  
13 any sort of discussions with the City about  
14 these extensions?

15 SERGIO MAMMOLITI: Oh, yes. I'm sure.  
16 We would have -- so generally when we have  
17 contracts like this it's a "not to exceed". So  
18 we estimate it will take whatever, I'm pulling  
19 numbers out of the air, a hundred hours to do  
20 this. And as we're getting close to the hundred  
21 hours we would say, Look, we're running out of  
22 hours here. This is our new estimate. So there  
23 were those kind of discussions, yes.

24 EMILY YOUNG: And would they also have  
25 given you a new due date each time you're

1 extended?

2 SERGIO MAMMOLITI: The City? No. The  
3 City didn't set the due dates, that was RTG  
4 projecting when they were going to open.

5 EMILY YOUNG: So your date would work  
6 back from their projection?

7 SERGIO MAMMOLITI: Yeah. Right.

8 EMILY YOUNG: And it sounds like based  
9 on what you said before that you were  
10 undertaking this independently and you weren't  
11 taking direction from either the City or RTG?

12 SERGIO MAMMOLITI: Correct.

13 EMILY YOUNG: And just to confirm, you  
14 were not involved in the testing and  
15 commissioning process?

16 SERGIO MAMMOLITI: No, not at all.

17 EMILY YOUNG: Nor the trial running  
18 process?

19 SERGIO MAMMOLITI: I mean, I was aware  
20 it was going on but, no, I wasn't -- I think I  
21 might have rode the train at one point. I was  
22 on the train at a certain point. I wasn't there  
23 for trial running. No, I was not. I wasn't on  
24 the train for trial running, that was part of  
25 my, what does this thing look like tour. No,

1 no, I was --

2 EMILY YOUNG: Did you review the  
3 sufficiency of testing, commissioning and trial  
4 running in any way?

5 SERGIO MAMMOLITI: No. No. I just  
6 got reports. And you -- that lovely coloured  
7 graph you were just showing there, that's --  
8 those reports, and such, are -- were the  
9 evidence that lined up to move that thing from  
10 pending closure to closure. So that's what I  
11 saw, that the evidence starts piling in. Well,  
12 I saw the reports that said the evidence was  
13 piling in.

14 EMILY YOUNG: So would you have had a  
15 report that was specific to testing and  
16 commissioning or trial running?

17 SERGIO MAMMOLITI: I would have been  
18 more interested in the hazard log and showing  
19 that, you know, it links to -- well, this one,  
20 for example, is mitigated by a standard  
21 operating procedure and there's a link to the --  
22 I think we said the operational safety case in  
23 that one. So that's the kind of thing that I'm  
24 looking for, is there evidence to show that  
25 you've managed these hazard right to the end?

1 And yeah, look, there's an engineering safety  
2 insurance case. There's the case for safety.  
3 There's these other bodies of evidence that  
4 collected all that and presented it.

5 EMILY YOUNG: And would that hazard  
6 list and log that you were looking at, would  
7 that include hazards that might have come up  
8 during testing and commissioning or trial  
9 running?

10 SERGIO MAMMOLITI: So don't confuse  
11 defects with hazards. There's a different  
12 system for tracking defects. The analysis  
13 assumes that the system is built correctly.

14 If you have like a software bug or you  
15 painted it the wrong colour, that's a defect.  
16 And once it's corrected it will -- it will  
17 address the hazard. So the test to confirm the  
18 hazard has been correctly mitigated, controlled,  
19 would have failed because of said defect. But  
20 there's a different system that tracks a defect.

21 If -- it is possible, again,  
22 theoreticals here. If you we're digging the  
23 tunnel and we accidentally find sour gas, or  
24 radon, or something like that, that we might add  
25 things to the hazard log because we have to

1 modify the system because we found a radon  
2 source. It's possible, but that wasn't -- that  
3 didn't happen here, to the best of my  
4 recollection it didn't. Those are extremely  
5 rare, to find hazards after you get into --  
6 especially the commissioning phase.

7 EMILY YOUNG: It sounds like your  
8 analysis is assuming that things are going  
9 according to plan and there aren't defects.

10 SERGIO MAMMOLITI: Design. They are  
11 built to design.

12 EMILY YOUNG: Design.

13 SERGIO MAMMOLITI: And so the  
14 engineering safety assurance case provides the  
15 evidence of that. It points to -- so, for  
16 example, Thales did the signaling system and  
17 they have their own safety case, that was  
18 referenced by the engineering safety assurance  
19 case. And Thales has their body of evidence to  
20 show, yeah, this was our design, we've met it,  
21 here's our report.

22 Remember I told you we were at the  
23 railroad level, and then there's all these  
24 primary systems? So each primary system has its  
25 own safety case and body of evidence. Like what

1 you do to inspect tracks versus what you do to  
2 test signaling systems are different, right?

3 EMILY YOUNG: So in your review were  
4 you made aware at all that testing and  
5 commissioning and trial running had been quite  
6 compressed in this project?

7 SERGIO MAMMOLITI: Yeah. No, I was  
8 aware of that, yeah. That was scuttlebutt about  
9 how long is long enough? I can't remember if  
10 there were any arguments about what the contract  
11 said.

12 Again, in most projects it always  
13 comes down to, Well, what does the contract say?  
14 But, yeah, I don't -- I remember there were  
15 concerns -- everyone wanted this thing open in a  
16 hurry and they were trying to figure out how  
17 long does it have to be?

18 EMILY YOUNG: Would that have factored  
19 into your analysis in any way?

20 SERGIO MAMMOLITI: No. By that point  
21 almost all of this evidence would have been  
22 collected.

23 Again, the analysis is that you've put  
24 in the correct measures to manage the safety of  
25 this thing, by whatever means, operating

1 procedure, design, and such, and you have a body  
2 of evidence to support that it's working.

3 The trial running, as I recall, was  
4 more about getting everyone used to running this  
5 thing in real life. That's literally what a  
6 trial running is about. You're essentially done  
7 at that point it's just let's -- and, in fact, I  
8 think they invited some people to ride on it  
9 during trial running to give them a sense of  
10 what it's like to get people through fare gates  
11 and things like that.

12 But yeah, at that point, no, I'm  
13 largely done by the time trial running has  
14 started.

15 EMILY YOUNG: Do you remember what  
16 timeline you were given for this fifth and final  
17 revision of your report?

18 SERGIO MAMMOLITI: Yeah. They  
19 announced they were opening it. I think it was  
20 September 19th was opening day, September 19th,  
21 2019. This was September 13th so, so yeah, it  
22 was right up to that. So we were a like  
23 week-ish before then.

24 EMILY YOUNG: And did you consider it  
25 unusual that this was so close to the planned



1 opening date when the first revision you've done  
2 you were asked to do six months before the  
3 opening date, approximately?

4 SERGIO MAMMOLITI: The six month thing  
5 was, as I recall, because of some union rules.  
6 They had to give notice to bus drivers that they  
7 were being laid off to -- because the LRT  
8 service was going to be taking the passenger  
9 load then. It was more about some union thing  
10 and giving them enough notice, otherwise the  
11 City would have to pay the bus drivers to sit in  
12 the lounge for six months. That was more why  
13 there was a six-month predate. It wasn't so  
14 much about safety as, you know, sufficient  
15 notice to the unions.

16 EMILY YOUNG: Did they explain to you  
17 why that had changed?

18 SERGIO MAMMOLITI: No, the safety guy  
19 didn't care. You do what you gotta do with the  
20 Unions, right?

21 EMILY YOUNG: And you mentioned  
22 September 19th as the operations opening day. I  
23 think what we have is actually September 14th,  
24 2019.

25 SERGIO MAMMOLITI: Is it? Okay. I

1 believe you. It was a couple of years ago so it  
2 was somewhere around there.

3 EMILY YOUNG: Of course. In any  
4 event, it was really close to the date of  
5 operations?

6 SERGIO MAMMOLITI: Yes.

7 EMILY YOUNG: And was this something  
8 you were aware of when you were preparing the  
9 report?

10 SERGIO MAMMOLITI: Sorry, what do you  
11 mean? Aware of what?

12 EMILY YOUNG: Were you aware of the  
13 planned date and that you would be delivering it  
14 so close to that date?

15 SERGIO MAMMOLITI: Oh, that's not  
16 unusual. There's always something that comes up  
17 at the end. There's probably one of my  
18 references that was in the works of being  
19 updated that -- and I don't have dates on the  
20 references, but it was probably one of them. It  
21 was probably the compliance management matrix.  
22 That's rep 35, probably that one. So one of  
23 these things. I was trying to make sure I was  
24 in sync with the latest version of reports that  
25 were coming out at the time.

1                   EMILY YOUNG: So you had to kind of  
2 wait for everything else to come in? Is that  
3 what you're saying?

4                   SERGIO MAMMOLITI: Yeah, I'm the tail  
5 on that dog.

6                   EMILY YOUNG: But while you were the  
7 tail on that dog you knew that you were working  
8 towards, you know, September 14th?

9                   SERGIO MAMMOLITI: Oh yeah. I was in  
10 Ottawa sitting in the rooms with these guys and  
11 they're publishing things and getting them to me  
12 hot off the press.

13                   EMILY YOUNG: And was there a degree  
14 of pressure on you to get this report completed  
15 in time?

16                   SERGIO MAMMOLITI: No. Like I said,  
17 my work is largely done by the time they start  
18 trial OPS. So this is just hanging around in  
19 case something pops up.

20                   Again, this is not unusual. When we  
21 were putting a system into service in New  
22 York -- New York City transit runs 24/7 and you  
23 basically have from 1:00 a.m. Friday night,  
24 Saturday morning, to 4:00 a.m. Monday morning.  
25 And so you're -- actually it's hilarious you're

1 waiting for concrete to dry, literally, while  
2 you're writing these reports. So it's not  
3 unusual to be right there with them at the very  
4 end.

5 EMILY YOUNG: That is quite the  
6 timeline.

7 SERGIO MAMMOLITI: There's sleepless  
8 nights there, you're pretty tired.

9 EMILY YOUNG: Did you understand, or  
10 was it expected that this was going to be your  
11 final revision to the report?

12 SERGIO MAMMOLITI: Yes. Yes. I think  
13 at that point it had been announced that it was  
14 going to be opening, so I don't think it was a  
15 surprise to anyone.

16 EMILY YOUNG: So would you have sort  
17 of told the City, before you finalized the  
18 report, that it would be your final report? It  
19 would support passenger carrying operations?

20 SERGIO MAMMOLITI: Oh, yes. Yeah,  
21 yeah, they would have known. Like I said, that  
22 was largely established before they started  
23 trial running.

24 EMILY YOUNG: So about -- around  
25 mid-August that would have been established?

1                   SERGIO MAMMOLITI: I would say early  
2                   September, but yeah, somewhere around there.  
3                   Yeah, mid-August, late August, around that  
4                   timeframe.

5                   EMILY YOUNG: And so what would have  
6                   happened if you -- suppose you're late in the  
7                   game, you're drafting your report and you find  
8                   something that does not meet the standards that  
9                   you're looking for. What would the implications  
10                  have been of something like that happening?

11                  SERGIO MAMMOLITI: Well, do you mean  
12                  like -- had I issued this report and then the  
13                  day after found out something? You mean in that  
14                  case?

15                  EMILY YOUNG: No. If you'd not been  
16                  able to issue the report supporting passenger  
17                  carrying operations, for some reason you saw  
18                  some kind of insufficiency.

19                  SERGIO MAMMOLITI: Well, I sit there  
20                  and cross my arms and I say, No. It's not a  
21                  pleasant situation, I've been in it before, but  
22                  it's -- that's -- again, remember the  
23                  Professional Engineering Act and the ethics  
24                  requirements for PEO. Your duty of care is  
25                  first and foremost to the public. I would have

1 been charged with criminal negligence or  
2 professional misconduct had I not. I would have  
3 said no.

4 EMILY YOUNG: And if you had said no  
5 would the City have been effectively bound by  
6 what you said and had to postpone, or could they  
7 still go ahead with operations?

8 SERGIO MAMMOLITI: Oh gee, I have no  
9 idea. It's -- now you're getting into  
10 legalities. I don't know. I don't know if they  
11 could have overruled me. I certainly would have  
12 went on record saying no. I don't know what  
13 they would have done, but I wouldn't be popular.  
14 I wouldn't want to go back to Ottawa after that.  
15 I don't know what they would have done.

16 EMILY YOUNG: Were you aware, when you  
17 were preparing your report, that RTG and the  
18 City had entered into a term sheet that deferred  
19 a number of retrofits until after revenue  
20 service availability?

21 SERGIO MAMMOLITI: Yeah. Yeah, they  
22 had some reliability issues, as I recall, with  
23 the power unit on the roof. And I think there  
24 was some reliability issues with the doors on  
25 the train that needed to be retrofitted. Yeah,

1 there was something going on but -- you know  
2 that operating restrictions document that I told  
3 you about, the ORD, that would have documented  
4 all that.

5 Yes. The last reference in rev 5,  
6 reference 37, it would have been catalogued in  
7 there.

8 EMILY YOUNG: So you would have been  
9 aware of the list of deferred retrofits?

10 SERGIO MAMMOLITI: Yes, absolutely.  
11 Because we probably would have been asked to  
12 offer an opinion. Is this impacting safety? Is  
13 RTG trying to pull a fast one on us? That kind  
14 of thing, right? The City would have asked us  
15 those kind of things.

16 EMILY YOUNG: Do you remember whether  
17 the City did ask you?

18 SERGIO MAMMOLITI: Yes, they did. We  
19 had several meetings where we were going through  
20 the punch list at the end. Does this matter?  
21 Does it not matter? Yes.

22 EMILY YOUNG: So you actually got to  
23 review them and gave your view on whether this  
24 was safety critical or not?

25 SERGIO MAMMOLITI: Yeah, or should we

1 be concerned about this. Yeah, exactly.

2 EMILY YOUNG: And in the end I assume  
3 that you didn't end up with any concerns?

4 SERGIO MAMMOLITI: Well, so again,  
5 remember there's a difference between safety and  
6 reliability. If the train never moves I don't  
7 care, it's safe. It's not useful but it's safe.  
8 So this -- I think I've used that same analogy  
9 with the City at some point, don't confuse the  
10 two. But, yeah, from a safety perspective I had  
11 no outstanding concerns.

12 EMILY YOUNG: So in this fifth  
13 revision you again, I believe, mentioned the  
14 delay in the development and completion of  
15 safety and security requirements? I think if  
16 you look at page 9 you will see that.

17 SERGIO MAMMOLITI: Yeah, yeah. I  
18 didn't remove that. Just to -- because often  
19 people just read the last revision and so I  
20 wanted them to get a bit of the history.

21 EMILY YOUNG: Do you have any  
22 understanding of what caused those delays?

23 SERGIO MAMMOLITI: No, that predates  
24 me. I have no idea.

25 EMILY YOUNG: And were the effects of



1 those delays ultimately felt?

2 SERGIO MAMMOLITI: In what regard? I  
3 mean --

4 EMILY YOUNG: I guess in the end  
5 product that you were reviewing did you see  
6 those delays coming through and having any  
7 effects at the end?

8 SERGIO MAMMOLITI: Again, it's not  
9 like this is the first train system in the  
10 world, right? A lot of this is -- like the  
11 vehicles were used elsewhere. Thales had  
12 signaling systems all over the place.

13 We tend to focus on what's unusual.  
14 And it's more about, did you consider all these  
15 things? Like, there's a scanning electron  
16 microscope nearby at the University of Ottawa.  
17 So the voltage of -- I know, so what, right?  
18 The voltage overhead is normally in the 700,  
19 750 volt range but this is in the 1500 volt  
20 range. Remember I told you about the -- you  
21 asked about the retrofits to the vehicle.  
22 That's a rather high voltage so that's unusual.  
23 We asked what's going on with that?

24 Two reasons, one is the scanning  
25 electron microscope in the University of Ottawa

1 is affected by magnetic fields, and by raising  
2 the voltage you lower the current which  
3 decreases the magnetic field.

4 Another fun fact, the north magnetic  
5 pole. For your GPS to work you need to know  
6 where the north magnetic pole is; and the  
7 tracking station for that is just outside of  
8 Ottawa.

9 And so the -- again, they wanted to  
10 minimize the magnetic fields in Ottawa by  
11 raising the voltage. So those are the kind of  
12 things we start asking questions about. This  
13 is different. Like, there's a requirement about  
14 not affecting the magnetic field, it's only like  
15 10, 15 kilometres away where that research  
16 station is. So there's things like that that  
17 are unusual and we tend to focus on what's  
18 different. Now, that's not safety obviously but  
19 that's what draws our attention typically.

20 EMILY YOUNG: And you mentioned again  
21 in this fifth revision about the risk that there  
22 would be an overreliance on standard operating  
23 procedures, and we just wanted to ask whether  
24 this risk materialized and how?

25 SERGIO MAMMOLITI: No, it didn't in

1 the end, it was just a risk. They actually did  
2 some things that were above and beyond. Like  
3 the tunnel ventilation system and the clearing  
4 of smoke, they automated a lot of that to  
5 minimize the cognitive load on the poor guy at  
6 dispatch if there's ever a fire in the tunnel.

7 There's hundreds of scenarios that  
8 spin off these fans, and they automated it so  
9 that it short-listed to the six or a dozen to  
10 minimize the potential for human error. They  
11 did some extra stuff even.

12 But I don't think it was overly  
13 reliant on operating procedures. That was just  
14 a risk. Again, like I said about the  
15 theoretical with the ear protectors instead  
16 of -- there's the risk that you miss something  
17 in the design that you could have put in to  
18 minimize the operating procedures. But, no,  
19 nothing strikes me. Nothing that I recall that  
20 was out of the ordinary.

21 EMILY YOUNG: And in your report you  
22 refer to the "operator safety case", and it  
23 seemed to me when I was reading that you were  
24 suggesting that that safety case had addressed  
25 some of the risk. Is that accurate?

1                   SERGIO MAMMOLITI: Yes. Yes. So that  
2 was the point of that report was, what are the  
3 implications for operations there?

4                   Part of that too was -- you remember  
5 that lovely graph we showed in the previous  
6 version? How some of those were transferred,  
7 those transferred were the ones that were by  
8 operating procedure. So the first thing I would  
9 have checked, well, did you check that in your  
10 operator safety case? Did you follow that  
11 thread through to the end?

12                  EMILY YOUNG: So that would address  
13 safety mitigations that had been transferred to  
14 the operator?

15                  SERGIO MAMMOLITI: Yes.

16                  EMILY YOUNG: And apparently the  
17 safety case concluded that:

18                         "OC Transpo has mobilized the  
19 necessary staff with the appropriate  
20 skills, training and certifications  
21 and with the appropriate rules and  
22 procedures in place to allow for the  
23 safe operations of the system in  
24 revenue service."

25                         That's on page 10.

1                   SERGIO MAMMOLITI: Yeah, I quoted  
2 them, didn't I? Rev 5, page 10. I'm there now.  
3 I'm not seeing it.

4                   EMILY YOUNG: In rev 5 it looks like  
5 it's at the top of page 10 and you're quoting  
6 directly.

7                   SERGIO MAMMOLITI: Oh yes. Well, then  
8 let me back up to the previous paragraph then.

9                   [Witness reading the document.]

10                  So I'm quoting right out of the  
11 operator safety case, correct.

12                  EMILY YOUNG: And is this a reflection  
13 of relying on standard operating procedures to  
14 ensure safety requirements are met?

15                  SERGIO MAMMOLITI: Yeah. That's -- I  
16 think that's what you -- I'm not really clear on  
17 the question. Are you asking is this normal?

18                  EMILY YOUNG: Well, that would be a  
19 good question, maybe you can answer that after.  
20 I guess the question is more so just -- they  
21 were relying, to some extent, on OC Transpo and  
22 how it was operating to make sure that the  
23 safety requirements were being implemented?

24                  SERGIO MAMMOLITI: Yes. The standard  
25 operating procedures were identified and

1 communicated to OC Transpo, yeah.

2 EMILY YOUNG: And is that unusual?

3 SERGIO MAMMOLITI: No. Oh heavens no.  
4 That's totally normal. You see in the movies  
5 there's these big dispatch centres with all  
6 these moving dots and -- take air traffic  
7 control, it's much like that. The guys are in  
8 there and they're controlling who comes in when,  
9 this train is delayed so I have to modify  
10 service. That's totally normal. This is --  
11 nothing unusual about this.

12 EMILY YOUNG: If you're relying on OC  
13 Transpo in this way, does that mean that their  
14 preparedness is quite important?

15 SERGIO MAMMOLITI: Oh of course.

16 EMILY YOUNG: And you quoted from the  
17 operator safety case here, did you take any  
18 steps to verify the conclusions of that safety  
19 case or to look behind the conclusions?

20 SERGIO MAMMOLITI: No. That was  
21 another group that the City had hired to write  
22 that report and they passed it on to me. I  
23 can't remember if it was sealed or not, the  
24 engineer seal, the PE stamp on it. So that was  
25 their work. So, no, I would have relied on

1 their expert opinion on this.

2 EMILY YOUNG: And were you aware that  
3 OC Transpo didn't have experience operating an  
4 LRT?

5 SERGIO MAMMOLITI: Well, they didn't  
6 have experience with the LRT but they had the  
7 O-Train. I mean, that's a diesel locomotive but  
8 -- so they weren't completely unfamiliar with  
9 railroads. But an LRT is -- well, it's just  
10 that, it's light, it's not heavy like a  
11 locomotive. That's literally what it means,  
12 it's the track and the weight of the track.

13 EMILY YOUNG: And would this -- the  
14 fact that they were new to LRT operations, would  
15 this have been something that was addressed in  
16 the safety case that you reviewed?

17 SERGIO MAMMOLITI: I honestly don't  
18 think it matters whether it's LRT or heavy rail.  
19 It's about moving people around and I can't  
20 think of an example where that would matter.

21 EMILY YOUNG: What about driver  
22 training? I mean, presumably they needed new  
23 training to operate the LRT. And I think in  
24 here you've cited what they said about OC  
25 Transpo mobilizing staff with the appropriate

1 training?

2 SERGIO MAMMOLITI: Yes. Well, it's a  
3 different vehicle than the O-Train so, of  
4 course, they would have been trained on how to  
5 use it.

6 EMILY YOUNG: Was training something  
7 that would have been addressed in the safety  
8 case?

9 SERGIO MAMMOLITI: It would have been  
10 in this operating safety case that you were just  
11 quoting from, yes.

12 EMILY YOUNG: And were you aware that  
13 the training process for operators and  
14 controllers had been compressed in this project  
15 for a number of reasons?

16 SERGIO MAMMOLITI: No. I think that's  
17 actually the first time I heard this. It was?  
18 No, I wasn't aware.

19 EMILY YOUNG: And were there any  
20 recommendations that might have been appropriate  
21 to kind of mitigate the inexperience of OC  
22 Transpo and their drivers in LRT?

23 SERGIO MAMMOLITI: So typically what  
24 happens is like -- so Alstom provided the  
25 vehicles in this case, right? So when the first



1 set of -- and again this is typical for any  
2 railroad. The first set of vehicles come and  
3 Alstom sends one of their drivers with and they  
4 typically start shadowing with that operator.  
5 And then it's a transition, or at some point  
6 they transition over and say, Hey, your guy is  
7 driving the trains now. But that was well  
8 removed from the kind of things that I was  
9 looking at. I have no idea what they did in  
10 this particular -- typically that's what  
11 happens.

12 EMILY YOUNG: So you wouldn't have  
13 been looking at things like, are they doing a  
14 soft start? Are they starting with a shadow  
15 operator? That's not really your area?

16 SERGIO MAMMOLITI: No, not at all.

17 EMILY YOUNG: Are you aware of what  
18 happened in the Ottawa project in that respect?

19 SERGIO MAMMOLITI: No.

20 EMILY YOUNG: I mean, they did not  
21 really have a shadow operator or go with a soft  
22 start.

23 SERGIO MAMMOLITI: Okay.

24 EMILY YOUNG: So it sounds like that  
25 just didn't factor into your work at all?

1                   SERGIO MAMMOLITI: No, not really. I  
2 mean, there's no real requirement to do that  
3 either, right? If you're ready, you're ready.  
4 If you're not then you might do a shadow  
5 operation, or something like that. But, again,  
6 that's more a call of the operator themselves  
7 whether -- that wouldn't have affected me. Are  
8 there necessary and sufficient measures in place  
9 is what I'm looking at.

10                  EMILY YOUNG: And so in addition to  
11 operator safety case that you reviewed, you  
12 also -- you relied on documents from Thales,  
13 Alstom, OLRT, EJVV, among others, as evidence  
14 that the primary systems met their safety  
15 requirements?

16                  SERGIO MAMMOLITI: Yeah. There was --  
17 I mean, I had limited exposure to them. I did  
18 see them. I was much more interested, again  
19 because I was on the railroad level in that  
20 engineering safety and assurance case, and there  
21 was a case for safety underneath that, and then  
22 those eventually fall up to the various primary  
23 system ones.

24                  I think the Alstom and the Thales ones  
25 fed directly to the engineering safety assurance

1 case. There was something contractual why it  
2 was structured that way. I didn't care.

3 EMILY YOUNG: Was it a similar  
4 approach to those documents and those subsystem  
5 safety cases as others in that it would be  
6 prepared by an engineer and you would sort of  
7 rely on the conclusions?

8 SERGIO MAMMOLITI: I've seen it in  
9 both. Well, I mean they're always prepared by  
10 engineers. Somebody within Thales, for example,  
11 has an engineering license and they have to have  
12 a certificate of authorization. They have to,  
13 it's a legal requirement. So in the broadest  
14 sense, yes.

15 EMILY YOUNG: What I'm really getting  
16 at is sort of that similar question about  
17 looking behind those documents, or looking  
18 behind those conclusions, are you doing -- or  
19 are you more or less taking the conclusions as  
20 they are?

21 SERGIO MAMMOLITI: So I looked at the  
22 engineering safety assures case, that was  
23 prepared by RTG. It would have been their  
24 mandate to go right into the nitty-gritty of it  
25 because they're rolling it up, if you will.

1                   EMILY YOUNG: So you were mainly  
2 focusing on the engineering safety and assurance  
3 case?

4                   SERGIO MAMMOLITI: Yeah. And the  
5 things that fed it. So that case for safety,  
6 for example, and such, yeah.

7                   EMILY YOUNG: And it -- the  
8 engineering safety assurance case, it seems like  
9 it showed up for the first time in your fifth  
10 revision, is that normal?

11                   SERGIO MAMMOLITI: Oh gosh, yeah.  
12 There's a dozen different ways to do this, to be  
13 honest. It's not unusual, let's put it that  
14 way. And sometimes they produce one at the end  
15 of the design phase, they didn't do that here.  
16 It's not required. You don't -- the standard is  
17 that you do one at the end. The only reason you  
18 would do one before is to give visibility as to  
19 your progress.

20                   EMILY YOUNG: Okay. And you didn't  
21 have any concerns about the engineering safety  
22 and assurance case that RTG ultimately submitted  
23 to you?

24                   SERGIO MAMMOLITI: No. No, I  
25 wouldn't. In fact I think I quoted it in the

1 end too. It's about its conclusion so, no, I  
2 was satisfied at that point.

3 EMILY YOUNG: So sort of coming back  
4 to the question of whether there was anything  
5 unusual or notable about this Ottawa LRT project  
6 for you, do you have any further thoughts on  
7 that?

8 SERGIO MAMMOLITI: Oh, there's  
9 something odd and unusual about every project.  
10 Oh gee, I mean we can get story time if you  
11 want. There's all sorts of wonderful things  
12 like the tunnel collapse, I've heard stories  
13 about that. But every project has its little  
14 foibles.

15 EMILY YOUNG: So it sounds like there  
16 was nothing that really, really has stuck with  
17 you?

18 SERGIO MAMMOLITI: Nothing that they  
19 didn't address. Like silly little things. The  
20 smoke clearing thing they brought didn't fit  
21 through the platform so they had to shrink it  
22 down. It's like a sweeper, and they got to the  
23 first station and they couldn't get by. Dumb  
24 little things like that happen all the time, but  
25 that's water cooler talk. Did you hear about

1 this one?

2           EMILY YOUNG: Okay. So as far as the  
3 safety-related aspects of the project go,  
4 anything in that respect? Kind of more in your  
5 area?

6           SERGIO MAMMOLITI: I remember the  
7 incident with the smoke in the tunnel. They  
8 were running a smoke test and it didn't go well.  
9 I remember that. But they did mitigate that in  
10 the end. That made the news actually, that four  
11 people were actually in hospital for smoke  
12 inhalation. They were running a test and it  
13 didn't go well. And so -- but, again, they  
14 fixed that in the end.

15           Remember I told you about that short  
16 listing of scenarios of things like that.  
17 They -- yeah, that was -- I think that might  
18 have been the impetus behind that.

19           EMILY YOUNG: Was it surprising to you  
20 that when you were first retained to perform  
21 your audit you could barely even start it  
22 because the requirements were missing, their  
23 safety plan was insufficient, all of that?

24           SERGIO MAMMOLITI: It was  
25 disappointing more than shocking. It's -- yeah,

1 I mean, I've been doing this for a long time.  
2 I've seen a lot of really broad range of things  
3 done well, things done not so well.

4 It was unusual that -- again, it's not  
5 that they didn't do it. They had an extensive  
6 hazard log at the beginning when I showed up.  
7 What wasn't evident is that they flowed that  
8 down to the various suppliers. So that's really  
9 the gist of that first report, is like I really  
10 can't do much because you haven't shown me how  
11 you flowed this down. The hazard log was quite  
12 large even at that point.

13 EMILY YOUNG: And do you know whose  
14 responsibility it would have been to flow those  
15 things down?

16 SERGIO MAMMOLITI: I presume that was  
17 RTG Construction that -- again, you'd have to  
18 check the contract to see whose scope that was,  
19 but I think it was RTG. I can't imagine it  
20 would have been anyone else.

21 EMILY YOUNG: Is that sort of like  
22 almost a contract alignment problem?

23 SERGIO MAMMOLITI: No, no. That's  
24 fairly typical, right? These design-build  
25 things are exactly that. Go design and build me

1 one of this thing. I need this, capacities,  
2 whatever. Make it so. You guys are experts on  
3 this stuff. So, again, not unusual.

4 EMILY YOUNG: Did you feel that the  
5 safety-related aspect of the project were  
6 sufficiently supported, that there were enough  
7 resources put into them, that kind of thing?  
8 Enough people?

9 SERGIO MAMMOLITI: On whose part? The  
10 City or RTG you mean?

11 EMILY YOUNG: If you could let us know  
12 for both?

13 SERGIO MAMMOLITI: Well, the City  
14 hired us to be safety auditors. As they said,  
15 yeah, this was all flowed down to RTG in the  
16 contract. So I wouldn't have expected the City  
17 to have those kind of people. I know they had  
18 the one fellow, Garrett. I know Garrett does  
19 safety. I can't remember if he was hired for  
20 that in this project.

21 In any case, yeah it's not unusual to  
22 have that flow down to the constructor.

23 Metrolinx does that in Toronto, and Vancouver  
24 TransLink does that in Vancouver, and so on.

25 You don't need a safety expert all the



1 time, just really when you're designing and  
2 building systems, and if you're not doing that  
3 you don't have that expertise around. I  
4 wouldn't expect the City to have that in any  
5 kind of permanent method.

6 But RTG, or any constructor, or any  
7 consortium that pulls one of these things  
8 together typically has their own people, the  
9 Parsons, the Dragados, the Hatch, all these  
10 various suppliers, name one. They typically  
11 have their own people that do that.

12 EMILY YOUNG: And did you get the  
13 impression that RTG was putting the type of  
14 resources you would expect into the safety side  
15 of the project?

16 SERGIO MAMMOLITI: Yeah. No, they had  
17 people there. Yeah. Yeah, yeah, Abe [ph] was  
18 there, Richard. They had a number of resources  
19 involved, systems engineering supports.  
20 Certainly by the time I got there they were  
21 ramping that up, right. Well, they said -- I  
22 don't know what was there before but they  
23 certainly had a growing crew of them whilst I  
24 was there.

25 EMILY YOUNG: And these were people

1 with the right type of experience?

2 SERGIO MAMMOLITI: Yes.

3 EMILY YOUNG: Do you have any views,  
4 and just asking you from your own perspective,  
5 on what could or should have been done  
6 differently in this project?

7 SERGIO MAMMOLITI: Hindsight is always  
8 great, isn't it? I think I told the City, you  
9 brought us in too late. You should have had  
10 someone like us on sooner. And in fact they  
11 took that to heart. When they did Stage 2 they  
12 brought in a safety auditor much earlier.  
13 That's just from my own perspective on the  
14 engineering side. There's a hundred ways to  
15 skin a cat and it depends on what you're trying  
16 to do, right. Some methods are better than  
17 others.

18 EMILY YOUNG: And was the reason that  
19 you recommended they bring on a safety auditor  
20 earlier so that you could flag the type of  
21 issues that you did flag earlier on?

22 SERGIO MAMMOLITI: Yeah, and avoid the  
23 delays in the end, because I know that was very  
24 important for the City to open when they did.  
25 There was -- it was constantly making the news,

1 right. You're never popular when you're late.

2 EMILY YOUNG: So did you see the  
3 delays in flowing down those safety  
4 requirements, and everything that flowed from  
5 that, as contributing to the overall delay of  
6 the project?

7 SERGIO MAMMOLITI: Oh, you're getting  
8 out of my wheelhouse here. No. We're usually  
9 the victim of other things, right? Because --  
10 well, like I said, we're writing this report  
11 right to the very last day, and there's a number  
12 of factors. Like I said, you're always there  
13 working late nights at the end, there's nothing  
14 unusual about that. These are all  
15 hypotheticals, no, not really.

16 EMILY YOUNG: Okay. Fair enough. Do  
17 you have any views -- this is probably more out  
18 of your wheelhouse, but let us know your  
19 thoughts on the root causes of the breakdowns  
20 and derailments that the system has seen?

21 SERGIO MAMMOLITI: Yeah. That's -- I  
22 mean, nothing more than what's been publicly  
23 made available. I was off the job at that  
24 point. I mean, I'm aware that one wheel fell  
25 off and a gear box fell on the track underneath.

1 Those are -- that's not the Transport Safety  
2 Board, that's the U.S. -- I forget what the  
3 equivalent -- in my industry any time any report  
4 like that gets published it gets emailed around  
5 to everybody.

6 No, nothing more than what's  
7 publicly-available.

8 EMILY YOUNG: So you didn't have any  
9 involvement in those in any way?

10 SERGIO MAMMOLITI: No, not at all.

11 EMILY YOUNG: And when you heard about  
12 them is that something -- was your reaction  
13 surprise? What was your reaction?

14 SERGIO MAMMOLITI: Yeah. When a wheel  
15 falls off everyone's reaction is surprise. How  
16 did that happen? That's not supposed to happen.  
17 Yeah, yeah.

18 The other thing about my line of work  
19 is that you have to be really careful to not get  
20 yourself into confirmation bias. You do not  
21 jump to conclusions about what went wrong, let  
22 the evidence lead you. You have to be really,  
23 really careful about that. So not being privy  
24 to anything more than the public report. There  
25 was obviously a wheel bearing failure. Why? I

1 got nothing. I don't know.

2           EMILY YOUNG: And were you consulted  
3 at any point about any of the other issues that  
4 arose with the system? Like the door issues,  
5 the switch failures, some system integration  
6 problems, things like that?

7           SERGIO MAMMOLITI: After I issued this  
8 report, you mean? Once it was in service?

9           CHRISTINE MAINVILLE: Either during  
10 the testing and commissioning, trial running  
11 phase or after?

12           SERGIO MAMMOLITI: Afterwards, no, not  
13 at all. It went dead silent. Testing and  
14 commissioning, I mean, that's why we do testing  
15 and commissioning is to test these things and  
16 shake things out before it goes into service.  
17 So there's always some kind of failures.

18           The switches? No. I didn't know  
19 there was a problem with the switches. I  
20 thought it was something with the snow jamming  
21 up in the winter, one of the heaters weren't  
22 doing something properly there. Again, that's  
23 why you test these things and run them. You do  
24 your commissioning and integration and trial  
25 running to see what pops up.

1                   EMILY YOUNG: Do you remember being  
2 asked about any winter testing? Or issues to do  
3 with winter testing?

4                   SERGIO MAMMOLITI: I remember that  
5 being in the news. That was just death, that  
6 was so unfair. There was a snowstorm in Ottawa,  
7 the train got -- something went wrong with the  
8 power unit on the roof and it was stalled and  
9 then the snow drifted around it. And as I  
10 recall, again this is the water cooler talk,  
11 instead of digging it out they were in a hurry  
12 to get it moving so they just drove it and one  
13 of the panels popped off because it was frozen  
14 to the snow. You're not supposed to do that,  
15 you're supposed to dig it out. But it hits the  
16 news and, you know, they're not built for snow  
17 and things like that.

18                   You have to take all that with a grain  
19 of salt. The news is trying to make something  
20 sensational out of sometimes things that are  
21 just nothing. Again, that's all water cooler  
22 talk, right? I personally thought that one was  
23 unfair.

24                   EMILY YOUNG: Would you have  
25 considered something like the journey times that

1 the trains were supposed to achieve in -- as  
2 part of your review?

3 SERGIO MAMMOLITI: No, not at all.  
4 Don't care. It could take forever as long as  
5 everyone is safe.

6 EMILY YOUNG: Would you care if they  
7 were required to go a certain speed that might  
8 have safety implications? Would that ever be  
9 something that you would ever be concerned  
10 about?

11 SERGIO MAMMOLITI: Too slow? No. Too  
12 fast? Yeah. But that's the whole point of the  
13 signaling system and train control system,  
14 that's what those safety cases -- it will not  
15 overspeed because here's the speed limit there.  
16 This is how the system responds to it. In fact,  
17 that's one of the hazards, overspeed. They  
18 cause derailments and things like that.

19 EMILY YOUNG: We talked about this a  
20 little bit before, but I think you said that you  
21 were aware that there were some reliability and  
22 performance issues that came up in the testing  
23 and commissioning and trial running phases. And  
24 did you have any discussions with RTG or the  
25 City, or anyone about those issues?

1                   SERGIO MAMMOLITI: Yeah. Again, the  
2 power units on the roof, I remember those  
3 because they are higher voltage than typical. I  
4 think they were having some problems with those.

5                   The doors, I recall them being an  
6 issue. There was the emergency release handle,  
7 there was a problem with that. There's a  
8 mechanical issue in there and how the camera  
9 moves to open it. And so something like that,  
10 for example, we wouldn't let a vehicle go into  
11 service unless that was repaired, that's safety  
12 critical. They have to get off if there's a  
13 need to evacuate. Insofar as the retrofits  
14 after being in passenger service, that would  
15 have been a no-no. You can't let that train go  
16 into service until it's retrofitted.

17                  EMILY YOUNG: So you would have --

18                  SERGIO MAMMOLITI: I remember after  
19 they opened, again, on the news there was all  
20 sorts of things about door reliability issues,  
21 but that was more after they opened.

22                  And I remember the news saying too  
23 that was because people were pushing on them  
24 instead of just letting them open and that was  
25 jamming them in the end. But that's just off of



1 CTV or Global, or whomever, right?

2 EMILY YOUNG: So it sounds like you  
3 would have had discussions with RTG or the City  
4 about leading up to revenue service availability  
5 if they involved something safety critical?

6 SERGIO MAMMOLITI: Correct, yes.

7 EMILY YOUNG: So would they -- they  
8 might bring an issue to you and ask you, is this  
9 going to be a problem? Is this safety critical?

10 SERGIO MAMMOLITI: Yeah.

11 EMILY YOUNG: And then you'd be able  
12 to give your view on that?

13 SERGIO MAMMOLITI: Well, I mean,  
14 again, I can't tell them what to do design-wise.  
15 Rideau station, for example is quite deep,  
16 right? Because it goes under the Rideau Canal  
17 and then services the mall right beside there,  
18 so it's quite far down. And I remember there  
19 was an issue with, if there's a specific type of  
20 fire there and there's a failure in one of the  
21 ventilation fans that they might trip the  
22 breakers, because they're -- these motors when  
23 they start-up they're huge and they draw a lot  
24 of current, it might trip the breaker and then  
25 you have no ventilation.

1                   So I remember them presenting that  
2 problem to me and they were moving me lock step  
3 with them. You know, this is what we found.  
4 This might be a problem. Here's our potential  
5 solution. Okay, keep me in the loop. In the  
6 end it wasn't a problem, the transformer rating  
7 was fine. I think it ran at 120 percent load,  
8 or something like that, for 120 seconds and it's  
9 rated for 5 minutes at 25 percent overload. So  
10 it was fine in the end. Those kind of things.

11                   But like I said, every project has  
12 some weird things like that. But they did bring  
13 those kind of things to my attention.

14                   EMILY YOUNG: And the main thing for  
15 you was, at the end of the day had they  
16 mitigated the risk or dealt with that issue?

17                   SERGIO MAMMOLITI: Right. In fact  
18 they were very good about bringing those issues  
19 to me. They were quite open and forthcoming.

20                   EMILY YOUNG: And would that have been  
21 RTG usually bringing those issues to you?

22                   SERGIO MAMMOLITI: Yes, and the City.  
23 There was actually a fairly good relationship  
24 there. There wasn't that animosity that you  
25 would think. I mean, things now aren't pretty.

1 It was actually okay back then.

2 EMILY YOUNG: So you found that they  
3 had quite a collaborative relationship at the  
4 time when you were there?

5 SERGIO MAMMOLITI: Oh very. Those  
6 SEMP guys that you talked about, yeah, they were  
7 sharing stuff with me all the time. That's why  
8 I was surprised when you said that they were  
9 [indiscernible]. Not at all, they were on the  
10 other side of the table.

11 EMILY YOUNG: And as between RTG and  
12 the City, how did you see that relationship  
13 working?

14 SERGIO MAMMOLITI: When I first got  
15 there I think the City was already aware that it  
16 was going to be late. So I think there was  
17 something like -- but it certainly got better.  
18 I think RTG got more comfortable just being  
19 straight with these guys. Yeah, it certainly  
20 got better at the end. I didn't see that as  
21 problem.

22 CHRISTINE MAINVILLE: Can I ask you,  
23 who did you interact with at RTG exactly?

24 SERGIO MAMMOLITI: Oh gee, it was  
25 mostly through the SEMP people. What was his

1 name, Peter Lauch was the head guy there and now  
2 and again I would meet with him.

3 Who was the other guy? I can't  
4 remember their names now. There safety person  
5 now and again, David Bobner [ph] was there,  
6 Richard Duncan mostly who I dealt with.

7 It was primarily through SEMP. But,  
8 again, Peter Lauch would give progress and  
9 things like that.

10 CHRISTINE MAINVILLE: Are you aware  
11 whether you would have interacted with anyone at  
12 OLRTC, or would that distinction have been  
13 apparent to you, for instance Matthew Slade?

14 SERGIO MAMMOLITI: Yes, that name  
15 rings a bell. Yeah, he was doing requirements.  
16 Matt Slade. Yeah, the name certainly rings a  
17 bell. I don't know if I could pick him in a  
18 police line-up.

19 EMILY YOUNG: What about the name Sean  
20 Derry, does that ring a bell?

21 SERGIO MAMMOLITI: Yeah, Sean I  
22 interacted with quite a bit.

23 CHRISTINE MAINVILLE: Could I get --  
24 could we get five more minutes if we're at time?

25 KEVIN JOHNSON: Yes, five minutes.

1 That will push us.

2 CHRISTINE MAINVILLE: Emily, I have a  
3 few questions if you're done.

4 EMILY YOUNG: Yes, please go ahead.

5 CHRISTINE MAINVILLE: First of all,  
6 how much attention do you give to the rolling  
7 stock as opposed to all other aspect of the  
8 system?

9 SERGIO MAMMOLITI: That is, as I  
10 understand, a separate contract from RTG. I  
11 thought the City procured the vehicles  
12 separately. So -- and RTG's role was to  
13 integrate them into the system, I think. And  
14 that's why RTG incorporated the rolling stock  
15 safety case into their engineering safety and  
16 assurance case, right?

17 CHRISTINE MAINVILLE: So you would  
18 still look at that quite significantly I would  
19 think?

20 SERGIO MAMMOLITI: Well, it's in my  
21 list of references. Yeah, there's certainly --  
22 to check that does this look like good goods.  
23 But did I go to -- I think these were  
24 manufactured in Cornell, New York. Did I ever  
25 go there? No. I don't think I even went to the

1 yard. Did I get to the yard? That's where the  
2 vehicles were I think being delivered and  
3 assembled. They were arm's length away from me.

4 CHRISTINE MAINVILLE: Thales and  
5 Alstom in particular?

6 SERGIO MAMMOLITI: Yes. I visited  
7 Thales once. Oh, no, that was the silent  
8 observer SEMP was there, or RTG was doing an  
9 audit on Thales and they invited me to, again,  
10 moving lock step with them to do their assurance  
11 activities.

12 CHRISTINE MAINVILLE: So would you,  
13 for instance, Alstom has had a consolidated  
14 safety file setting out the hazards and  
15 mitigation measures. So is that part of the one  
16 that you reviewed?

17 SERGIO MAMMOLITI: They supplied it to  
18 RTG and RTG shared with me.

19 CHRISTINE MAINVILLE: You're aware  
20 that in terms of safety regulations the  
21 Transport Canada regulations don't apply, they  
22 were delegated to the City, is that fair?

23 SERGIO MAMMOLITI: No I wasn't, but  
24 okay.

25 CHRISTINE MAINVILLE: So would you not

1 look at the City's safety regulations?

2 SERGIO MAMMOLITI: Transport Canada  
3 doesn't have a lot to say about system safety,  
4 and that's more where I get into things, right.  
5 I mean it was one of the standards -- I mean,  
6 there's a laundry list there of things, the Rail  
7 Safety Act and things like that. But, yeah,  
8 that's -- those are more geared towards freight  
9 trains. They don't have a lot of bearing  
10 metros.

11 CHRISTINE MAINVILLE: So the City --  
12 my understanding is the City had its own  
13 regulations? They basically are in charge of  
14 oversight of the safety of this system, is that  
15 your understanding? Of this LRT?

16 SERGIO MAMMOLITI: I think there's a  
17 bit of weird history on this one. That O-Train  
18 we talked about that goes down to Carleton,  
19 that's an old freight line. And because there's  
20 a bridge that goes into Quebec, I think that's  
21 why Transport Canada is involved, because it  
22 crosses a border. I think there was something  
23 like weird like that. It was largely irrelevant  
24 to the safety case as a whole. I remember the  
25 City explaining something like that at the

1 beginning but --

2 CHRISTINE MAINVILLE: So is that not  
3 something you would look at if the City had  
4 safety regulations relating to this LRT? Would  
5 that not be something that you would expect to  
6 look at?

7 SERGIO MAMMOLITI: Transport Canada  
8 rules generally don't apply to LRTs.

9 CHRISTINE MAINVILLE: I'm not asking  
10 about Transport Canada, the City. The City  
11 having regulations relating to this.

12 SERGIO MAMMOLITI: I'm not aware of  
13 that. I mean, the Project Agreement listed a  
14 bunch of regulations and standards, but --

15 CHRISTINE MAINVILLE: And that's what  
16 you would be looking at basically, the  
17 requirements in the Project Agreement?

18 SERGIO MAMMOLITI: Yeah, yeah.

19 CHRISTINE MAINVILLE: What was your  
20 understanding of the -- you said Alstom's  
21 vehicles had been used elsewhere, what was your  
22 understanding of the level of how service-proven  
23 this model was?

24 SERGIO MAMMOLITI: I just know that  
25 they were used somewhere else. And that was in



1 the context of the news when they were talking  
2 about it's not built for cold.

3 I think they're in -- I don't remember  
4 where they are. They are somewhere cold in  
5 Europe, so that was the context. I think the  
6 City -- yeah, yeah, that's -- I'm vaguely aware,  
7 let's put it that way.

8 CHRISTINE MAINVILLE: You talked about  
9 shadowing the drivers, you've seen that  
10 elsewhere, is that a best practice or something  
11 that you see frequently that's pretty standard?

12 SERGIO MAMMOLITI: It depends. It  
13 really depends on the operator in the end  
14 whether they want to do that or not. I've seen  
15 it done, I've seen it not done.

16 CHRISTINE MAINVILLE: You mentioned  
17 that someone else would be looking at -- or  
18 another group would be looking at defects as  
19 opposed to, you know, you're looking at the  
20 system, assuming the system has no defects. So  
21 who would that be?

22 SERGIO MAMMOLITI: Well typically  
23 that's your quality management group, your  
24 quality control, QA kind of stuff.

25 CHRISTINE MAINVILLE: And then do you

1 happen to know who it was on this project? Like  
2 was it internal to the City or would it be an  
3 arm's length --

4 SERGIO MAMMOLITI: No, it was RTG  
5 because they were the design built guys so they  
6 would be responsible for that. I don't recall.  
7 I just -- I know the engineering safety  
8 assurance case did cover that but I can't recall  
9 who those people were.

10 CHRISTINE MAINVILLE: Just very  
11 briefly, the retrofits that we're deferred in  
12 terms of the term sheet, did they include any  
13 work on the brakes, to your recollection?

14 SERGIO MAMMOLITI: I don't think so.

15 CHRISTINE MAINVILLE: And would that  
16 be something that would necessarily be safety  
17 critical, or it would depend on what the issue,  
18 may be?

19 SERGIO MAMMOLITI: It depends entirely  
20 on what it is, yeah.

21 CHRISTINE MAINVILLE: Did you look at  
22 the maintenance plans from RTM?

23 SERGIO MAMMOLITI: No.

24 CHRISTINE MAINVILLE: That's not part  
25 of your scope?

1 SERGIO MAMMOLITI: No, it wasn't.

2 CHRISTINE MAINVILLE: Well, if the  
3 maintenance plans are not adequate, let's say  
4 hypothetically, would that not potentially  
5 impact safety and the requirements?

6 SERGIO MAMMOLITI: But that's the  
7 operator safety case that would have been  
8 chasing that down, right?

9 CHRISTINE MAINVILLE: So who would be  
10 looking at that?

11 SERGIO MAMMOLITI: I believe that was  
12 Parsons that authored that report. That was a  
13 separate contract with the City, I believe.

14 CHRISTINE MAINVILLE: Just -- last  
15 question. You mentioned there was no  
16 overreliance on the standard operating  
17 procedures, was it apparent to you, at least  
18 given the information that you got, even if your  
19 work was largely done in terms of the  
20 performance of the trains during trial running,  
21 leading up to RSA, was it apparent that there  
22 would be some pressure on operations and  
23 maintenance?

24 So were there issues arising that, you  
25 know, were not safety concerns from a safety

1 perspective, but perhaps from a reliability  
2 perspective, that you thought might engage some  
3 level of -- some added level of pressure on the  
4 maintenance side of things following RSA?

5 SERGIO MAMMOLITI: Nothing that jumps  
6 out at me. Nothing that I recall. I don't even  
7 know if I would have been made aware of that.  
8 Yeah, I'm going to go with no on this one.

9 CHRISTINE MAINVILLE: You're saying  
10 you wouldn't necessarily have been aware of  
11 reliability issues in the tail end of the  
12 project?

13 SERGIO MAMMOLITI: Well, I mean if  
14 they were on that punch list of course they  
15 would have come up, right? But like I say, I'm  
16 just trying to remember if there was anything  
17 like that. I mean, the doors were the obvious  
18 example, but that happened after they entered  
19 service, certainly not before.

20 They would have fixed all the power  
21 units on the roof there I was talking about.

22 No, nothing that -- I can't recall  
23 anything like that.

24 CHRISTINE MAINVILLE: Let me just  
25 understand though, to be sure. If issues arose,

1 reliability type issues arose during trial  
2 running, would those have been brought to your  
3 attention, or it's quite possible you have no  
4 sense of how things went?

5 SERGIO MAMMOLITI: Yeah, I wasn't  
6 necessarily privy to that, no.

7 CHRISTINE MAINVILLE: Okay. Thank  
8 you. I know I've kept you longer than we had  
9 said. We can go off record.

10 --- Completed at 12:11 p.m.

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1 REPORTER'S CERTIFICATE

2  
3 I, HELEN MARTINEAU, CSR, Certified  
4 Shorthand Reporter, certify;

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

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

11 That the foregoing is a certified  
12 transcript of my shorthand notes so taken.

13  
14 Dated this 27th day of April, 2022.

15  
16   
17

18 PER: HELEN MARTINEAU  
19 CERTIFIED SHORTHAND REPORTER  
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