Ottawa Light Rail Commission

Thomas Fodor
on Wednesday, April 20, 2022

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OTTAWA LIGHT RAIL COMMISSION

PARSONS/DELCAN - THOMAS FODOR

APRIL 20, 2022

--- Held via Zoom Videoconferencing, with all participants attending remotely, on the 20th day of April, 2022, 2:00 p.m. to 5:05 p.m.

COMMISSION COUNSEL:

Kate McGrann, Co-Lead Counsel Member
Liz McLellan, Litigation Counsel Member

PARTICIPANTS:

PARSONS/DELCAN:
Thomas Fodor

ALSO PRESENT:

Judith Caputo, Stenographer/Transcriptionist
Elizabeth Deasy, Virtual Technician

INDEX OF EXHIBITS

NUMBER/DESCRIPTION PAGE NO.

(None).

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

INDEX OF UNDERTAKINGS

The documents to be produced are noted by U/T and appear on the following pages: 118:23

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

THOMAS FODOR: AFFIRMED.

KATE MC GRANN: Good afternoon, Mr. Fodor. My name is Kate McGrann, I'm one of the co-lead counsel for the Ottawa Light Rail Transit Public Inquiry. I'm joined by my colleague, Liz McLellan, who is a member of the counsel team.

The purpose of today's interview is to obtain your evidence under oath or solemn declaration for use at the Commission's Public Hearings.

This will be a collaborative interview, such that my co-counsel, Ms. McLellan, may intervene to ask certain questions.

This interview is being transcribed and the Commission intends to enter this transcript into evidence at the Commission's Public Hearings, either at the hearings or by way of a procedural order before the hearings commence.

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

The transcript, along with any

corrections later made to it, will be shared with the Commission's participants and their counsel on a confidential basis before being entered into evidence.

You will be given an opportunity to review your transcript and correct any typos or other errors before the transcript is shared with the participants or entered into evidence. Any non-typographical corrections that you make will be appended to the transcript.

Pursuant to Section 33(6) of the Public Inquiries Act 2009: A witness at an inquiry shall be deemed to have objected to answer any question asked him or her upon the ground that his or her answer may tend to incriminate the witness, or may tend to establish his or her liability to civil proceedings at the instance of the Crown or of any person, and no answer given by a witness at an inquiry shall be used or be receivable in evidence against him or her in any trial or other proceedings against him or her thereafter taking place, other than a prosecution for perjury in giving such evidence.

As required by Section 33(7) of that Act, you are hereby advised that you have the right

to object to answer any question asked under Section 5 of the Canada Evidence Act.

If at any point during the interview you need to take a break, just let us know. We will stop recording and take a break as-needed.

THOMAS FODOR: Okay.

KATE MC GRANN: To start, would you provide us with a summary of your professional experience as it relates to the work that you did on Stage 1 of Ottawa's Light Rail Transit System.

THOMAS FODOR: I was working for Parsons at the time. My primary project was the Eglinton LRT system as an operations and maintenance planning specialist.

But in the course of my work there, Parsons asked me to serve as a consultant for the City of Ottawa in ensuring that the maintenance planning was performed accordingly and that when the Ottawa LRT system would start up, that the maintenance organization and the maintenance structure was in place.

So it was a -- sort of like a monthly, bimonthly trip I used to take to Ottawa to review with certain individuals the progress of the whole maintenance plan and all the activities and the

organizational structure for the maintenance of the system.

KATE MC GRANN: How long had you been working as on operations and maintenance planning specialist before you started working on Stage 1 of the Ottawa LRT?

THOMAS FODOR: About 40 years, 35 years.

KATE MC GRANN: And you mentioned that you had been working on the Eglinton LRT at the time you started working on the Ottawa LRT.

Can you just provide us with some examples from your 35 or 40 years of experience before you started in Ottawa of work that you've done?

THOMAS FODOR: Other projects that I've worked on?

KATE MC GRANN: Yes.

THOMAS FODOR: Well, I started in 1977 working on the Vancouver SkyTrain system, helped put that system in. The Scarborough LRT system. I worked in South Africa, the Gautrain system and did many, many proposals in Dubai, Australia, basically all around the world.

Worked in Korea, Malaysia, put the

Kuala Lumpur Putra system in place there. Basically doing operations and maintenance planning, helping with testing, commissioning. Ankara, Turkey, I helped put that system in as well, one of the metros there.

All in all over ten projects from start to finish, and many, many more proposals.

KATE MC GRANN: What's your educational background?

THOMAS FODOR: I'm an industrial engineer from U of T. I graduated in 1976 and I started in transit in 1977. So it's since then I've been doing operations and maintenance planning.

KATE MC GRANN: I believe that you started working on the Ottawa Light Rail Transit system in September of 2015; is that right?

THOMAS FODOR: I think it was around that time, yes.

KATE MC GRANN: Do you know if Parsons had been working on the project prior to your involvement?

THOMAS FODOR: I wasn't aware. It was -- at the time there were three or four of us that were requested to go there, one for operations, one

for maintenance, another one for systems engineering, overseeing what they were doing.

I think the City of Ottawa needed some help, so they had approached Parsons and they asked us because we were close by, we were all in Kingston. So it was close by, so it was pretty easy for us to get up there occasionally and check to see what was going on.

KATE MC GRANN: Okay. And so am I right that you were reviewing and overseeing work done by others in preparation for maintenance once the system went into revenue service?

THOMAS FODOR: Yes. It was preparation. Like, spare parts, the maintenance organization, the training programs for them, a host of things.

What type of subcontract they were getting for different elements. Just general, you know, making sure, maintenance away equipment. What type of maintenance away equipment did they have?

I was reviewing a lot of documents -- well, not procurement documents but documents for specifications on this equipment and generally dealing with the organization that was preparing

for this.

It was -- there was RTG, I think, that was constructing it then RTM which was the entity that was going to become the maintenance group, once the system was -- and everything was going to be handed to them from RTG to RTM, if I'm not mistaken. It's been a little while, but I just remember that's the way it was set up.

I worked with a small group of guys who were setting up the RTM organization.

KATE MC GRANN: If I've got it right, your role is to basically review and oversee the work they're doing on behalf of the City?

THOMAS FODOR: Yes, well, yeah, I was hired by the City to oversee what they were doing as a means of, you know, providing the maintenance for the OLRT later on.

KATE MC GRANN: Just to make sure that I understand, you're hired by the City to oversee the work being done by whom?

THOMAS FODOR: RTG and RTM. RTM was going to be the maintenance contractor, subcontractor, for the City of Ottawa because Ottawa was the operator, the operators were Ottawa, then they had a maintenance group called RTM.

KATE MC GRANN: Did you take over this job from somebody else when you started?

THOMAS FODOR: No, I don't think there was anybody there; that's why we went in. There were some documents that we started writing immediately because we realized there were some deficiencies in some of the typical documents we would create, like, a concept of operations document, a concept of maintenance document, concept of safety and security.

So those are three documents that we wrote for the City of Ottawa, so people would have an idea, a good idea as to how this system would operate and be maintained. And that wasn't in existence when we went in. Which should have been.

Typically, you have that at the beginning, and when we got in they were already well under construction and we sort of asked the questions and they were, you know, there wasn't anything like that. So we helped them create these documents for them.

KATE MC GRANN: When you say that these three documents, the concept of operations, the concept of maintenance and the concept of safety and security documents?

THOMAS FODOR: Yeah?

KATE MC GRANN: That you would have them at the beginning. Can you help me understand what you mean when you say "the beginning"?

THOMAS FODOR: Well, normally before you -- when you start -- like right now I'm working on Austin, in Texas, an LRV project there. So they are going into the design and they have an alignment and they have an idea what type of vehicle they want, the traction power, signalling the system.

It comes down how is this going to operate? Are you going to have spatial attendance or no spatial attendance? Are you going to have full ATO, or cab signalling, where the guy has some control?

All of this gets put into a concept of operations document and it explains to someone at a higher level -- we don't get into super detail -- but at a higher level how this thing will work in normal operation as well as failure management. Like, we've got crossovers here so you can do certain things with it.

So it's a high-level way of understanding and for us to understand what we're

looking at, what type of signalling system we need, and in the same thing when we were looking at concept of maintenance.

To what degree are we working with people here? Are we subcontracting certain work? What level are we going to do in-house work?

And then some things are proprietary so you can't touch it, you know, it's like your computer try to open up an iPhone. You know, you can't.

But you can do certain things before that. It's got everything, fare collection, power distribution, the vehicles themselves, stations, station facilities, maintenance away equipment.

All this comes into play in concept of maintenance document and you're highlighting, for example, snow removal. How are you going to remove snow? There's many ways of doing it.

And one type of methodology may work out in the fields out, you know, out in the woods with CN but it's not going to apply in the City when you're dumping snow over a bridge.

You have to highlight a number of these things, so people when they read it get a pretty good idea how this is going to work.

And then, you know, the detail documents come into play. What exactly are you buying? What exactly are these maintenance away equipment you're getting; what are the specifications and how many are you getting?

So it's a precursor to a lot of other documents.

KATE MC GRANN: Okay. You used two phrases and I just want to make sure we understand what they mean, you referenced ATO. What is that?

THOMAS FODOR: Automatic train operation.

KATE MC GRANN: I think you also referenced cab signalling; is that right?

THOMAS FODOR: Well, cab signalling there's about three or four levels. We call it "Grades of Moderation", "GOA". There's GOA0, 1, 2, 3, 4.

0 is pure manual; the guy is driving. There's no controls outside of his own braking and acceleration.

Then another level, cab signalling, that's a GOA2. If he tries to exceed the speed limit the system will slow him down or stop the train.

So there are some built-in safety mechanisms. If he tries to out -- exceed them, the system will react. The on board control system.

SkyTrain for example is UTO, it's unattended train operation. That's GOA4; that's the highest level. There are no drivers. It's like an elevator. You get on board -- in the old days you had a guy who pressed the buttons for you. Same thing with the train. It's just a horizontal elevator as far as I'm concerned.

SkyTrain, for example, is GOA4. UTO, the train, has a lot of redundancy, so if the train breaks down you still get to the station or get back home.

But you still need field staff because occasionally something goes wrong and it comes to a stop and then you have to retrieve it. That's a very rare thing, though, that's how they design it.

KATE MC GRANN: How does cab signalling fit into that?

THOMAS FODOR: Cab signalling is pretty standard in most places now. There's always some level of safety that systems want to put in. The Austin one is the same thing; they want a GOA2.

Now, in the yard, they're going to

GOA4. They want to go totally automated. So the guy gets off and the trains go off to wherever they go and then it comes back. The guy picks it up before he gets out on the revenue line, so there's a lot of ways of doing it.

And SkyTrain is GOA4 all over the place, yard and main line.

So there's different levels, it's money, also, it's complexity and money. GOA2 is pretty standard. You have a driver on board you don't want that guy running into another train in front of him so there's safety distances involved.

And this level of automation will prevent him from running into a train in front of him, or exceeding speed limits. So there's always a safe stopping distance in front of him.

And if he let's go of the handle, for example, it will come to a stop. Like, if he has a heart attack, it's a deadman's brake, basically. It will stop the system. He can't accelerate and go into the wall, for example, or another train.

KATE MC GRANN: Okay. And Ottawa, where would it have fallen on that scale?

THOMAS FODOR: Ottawa was a GOA2, a cab signalling type of set up.

KATE MC GRANN: Coming back to the concept of operations maintenance safety and security, I'm trying to understand where in the process from RFP to project agreement and detailed system design implementation, where you would expect to see those documents prepared and available?

THOMAS FODOR: Usually we were writing the PSOS, the specs for Eglinton, and we were just issuing -- just getting the bids, we already had the concept documents last year.

So we can provide it to them or provide it to anyone who wants to understand how the system works.

Usually at the front end, where you're starting to write the specifications a lot of time the specification would reflect how you conceptually want to operate, maintain and provide security in your specification that goes out to the bidders.

That was not the case in Ottawa. That was, we came in much later. They were already constructing and there was only a few years left before it was coming on stream. We were a little surprised.

It's not like without it you can't proceed, but it's unusual, in my experience, not to have those documents. Have them, as well as other documents that I use to provide for other projects as well. And they weren't around either.

KATE MC GRANN: Okay. When you use acronyms, I will try to --

THOMAS FODOR: Sorry.

KATE MC GRANN: It's PSOS, is "project specific output specifications".

THOMAS FODOR: That's right. That's what you hear all the time now.

KATE MC GRANN: So you would expect these concepts of operations, maintenance safety and security to be written by the City?

THOMAS FODOR: Well, someone for, you know, the owner, I guess would want that to be written by someone under their, you know, employment.

And they would then have a high level, you know, you talk to the high level senior up people, they don't want nitty-gritty stuff but at least if they read this they would get a good idea as to how we, you know, our expectation is. And of course they can say, what about this?

Then it's a quick way for them also to review and say, yeah, you're in line with what we want. That's what I'm doing with Austin right now.

We're writing this document up, and it's going to go the senior people to make sure that they're in agreement and we're in agreement with them, and they're in agreement with us, before we start putting out the spec and specifying something they're going, what are you talking about -- that's not what we wanted.

KATE MC GRANN: When you joined -- who identified that these concept of operations, maintenance safety and security needed to be written? Does the City know that this was something --

THOMAS FODOR: No, no the City didn't know. It was myself, and the other colleagues that I work with, Jon Hulse, who was, I think he's still at Parsons.

A good friend of mine I've worked with for many years in Bombardier before I joined Parsons and we immediately -- I guess we're used to how to do these things, and it just wasn't there.

So we mentioned it to the City and the boss we had -- I can't remember his name now -- he

said by all means let's write this up and make sure we have it.

KATE MC GRANN: What inputs did you use to inform yourself in order to be able to write these documents?

THOMAS FODOR: Well, usually start with a template. We had other co-operations and co-maintenance documents. It's high level. You know, discussing what type of level of automation you want, GOA2, okay, good so at least we have that checkmark.

We looked at the alignment. So we knew where the crossovers were, so we could determine what type of failure management capabilities it had.

Where the maintenance storage facility was and how do you get in and out of there. So just looking at that, just from experience, you get a pretty good feel for how this thing should work.

Again, as I said, it's high level, so it's, you know, once you've done a few projects you know what to look at.

There's usually a template, the table of contents, you just follow that down, and there's a lot of questions. As I said, right now for

Ottawa, I just looked at one of the things and already I'm filling in, but I'm putting question marks.

Like were TDT here? Not too sure it's GOA2 or whatever? Well, I do, but if you're not sure you put a question mark and that's questioned later and you fill it in.

Some of the vehicle information. I don't know what vehicle they want yet, so now they've handed me some information; I'll put that into the concept document. But not too detailed, just a general, so people know it's, you know, 100 meters long and, you know, so they have an idea what the platform length is.

Same thing with Ottawa. What's the platform length, the train length, two car train, three car train?

Is there, you know, are there station attendants, you know, maybe only at underground stations? What's the tunnel ventilation system length? Do they have that in? Is it jet fans or the big fans in the walls type of thing?

So there's a lot of questions that, you know, that just evolve, just talking to them. I don't know if we had too many documents to look at,

because they were -- if we did we probably looked at some generals, but it was hard to get, like, they didn't have a configuration summary document, which we usually do.

Again, it's our way of doing it, but a configuration summary is something like a bible where all the information, like, you know, what is the track signal? Is it 650, 750 or 1500 volts? You try to find it somewhere. But the configuration summary has a chapter on track signal and power supply. Tells you how many substations there are. What's the voltage, you know, for signalling, whether it's GOA1, 2, 3, 4? What type of signalling?

It's one of those things, what's the length of this system? Go to the alignment it will tell you it's 45 kilometers long, 12 stations and whatever. It's hard to find it when you're looking for documents and specific questions.

Configuration summary usually has that in there. It takes a little time to develop it. A lot of times it's TBD -- we're not sure yet so you put a TBD in.

But you get a document that gives you a really good view of the data that you'd like to

know, normally want to know, some of us want to know. What's the real diameter for the bogies? I don't know it could be 15 inches, 12 inches. I don't know. But in that you would probably find it.

KATE MC GRANN: And just so that I know the name of --

THOMAS FODOR: Sorry.

KATE MC GRANN: Sorry, say again.

THOMAS FODOR: And that type of document wasn't around either. It seemed to be very haphazard. There were a lot of documents but nothing that seemed to tie things together.

Like, with us when we walked in, it was, give me a document so I can understand the system. There wasn't too many like that. They were all doing their design work, but nothing that seemed to bring it all together as a system.

I think that's the best way to put it. There was system documents and system design documents seemed to be missing. You know, the overall big umbrella, there's people doing their things, but unless you talk to them you really couldn't figure out where everything fit in. At least that was my perspective, you know.

There was a PSOS, okay, so that helped us a lot because you can go in there and get it. But even there, I found some things lacking that I would normally expect to find for operations and maintenance, you know.

In fact that PSOS became the PSOS for Eglinton. It somehow migrates and it became what went to the Finch west and it's been to other things.

But for Eglinton, we spent a year and a half expanding on it. I remember that. That was the PSOS was probably the first of its kind, in Ottawa, and when I went to Parsons in Eglinton I realized shortly thereafter or once I started Ottawa, hey, this is where our PSOS came from. But it was much more expansive.

KATE MC GRANN: With respect to the PSOS and the information that you expected to see that was lacking, can you summarize for us what you thought would be there that you found to be missing?

THOMAS FODOR: Well, for example, normally I write a system performance in failure management document we call the "SPFMA", "System Performance Failure Management Analysis". And it's

a pretty detailed document.

It tells you virtually how this thing is going to run and you look at all the different routes and all the different failure management routes; it's a detailed assessment. There was none for, no request for it, in Ottawa.

When I went through their PSOS, I said you don't have this. How are you going to know what your failure management routes are?

In fact, I wrote up a number of failure -- created a number of failure management routes because they didn't seem to have any at the time, for the signalling guys.

I think they came up with -- if they put up if you put this together with that, you create any route. I want to see the routes all made out, so that's number 1, 2, 3, 4. Not if I put this, and I put this, and I put that together, I can create a route.

I just found it a little -- not as detailed as I would have liked to have seen some of this information.

And that's why I've been -- I'm talking about the operations so I was sort of -- although I was mandated to do maintenance, my background is

mainly operations, so I was helping a lot in that aspect as well.

One of the guys who worked with me from Parsons he was more the operator, but he was more a programmer so he was looking at their programs and see how things were going with the signalling and things like that. So I helped him out on that, too.

KATE MC GRANN: What was that person's name?

THOMAS FODOR: I was really supposed to be -- Glen McCurdy. He's still, I think he's still there in Kingston.

KATE MC GRANN: I interrupted you. I think you were going to say you helped Mr. McCurdy with operations, but your role was really focused on maintenance; is that right?

THOMAS FODOR: Well, that was -- yeah. I was basically told stick with the maintenance, which I did, but, you know, talking with Glen, a lot of times we were together I would help him on things.

Then when we were there for the actual opening and the testing, I was in the control centre with a number of other people watching what

was going on. And then in the evenings I would go out and watch the maintenance guy, so it was a pretty crazy time. I was putting in 18-20 hour days for a couple of weeks.

KATE MC GRANN: So you've talked about -- the document that you mentioned, I'm not sure I caught the name of it. Is it a configuration summary?

THOMAS FODOR: Yeah, when I worked for Bombardier for about 35, 37 years, we always wrote a configuration summary.

It was -- basically what it is is, it gives you information on every element, critical element. Vehicle, traction power, signalling, tunnel ventilation, stations all that kind of stuff, the main elements that -- communications.

You'd have a chapter, you know, four, five pages on alignment. Track work. So you knew how many number six switches you had, how many number eight switches, the life of track.

How many centre platforms, how many side platforms. Simple stuff, but every time you look at the drawing you could count out, this is how many we got. Or when you're designing it.

So if someone asked, how many stations

you got? We got 24. How many tunnel? There's five tunnel, three elevated. So these are the type of things you want to know because each, that will also affect your concept of operations.

So tunnel operation is different than elevated. And there's a difference in the at-grade operation, at-grade meaning ground. You're going through intersections very different than a totally exclusive tunnel or elevated guide way.

So all of these things, when you put it together, it gives you a very quick idea, okay, I've got tunnel, now I have fire, tunnel ventilation issues. If it's all at-grade I have no issues with fire and smoke; there's nothing to contain it.

So that would immediately affect your concept of operations. And there's another terminology that I use a lot is SOPs, which are standard operating procedures.

Again, from the concept of operations, you know that for V-graded operations I have to worry about tunnel operation, or elevated. How do you get people off an elevated guide way? How do you get snow off an elevated guideway as opposed to at-grade. You have to worry about snow in the

tunnel? No, you don't have to worry about snow in a tunnel.

So everything, it also, from a system umbrella point of view, once you know all these little itty bitty pieces of information, you can quickly surmise what you need. And this is what the concept of operations reflects, and the configuration summary helps you with all the little details you need.

How many vehicles? Even, I don't know how many times you walk around and go, how many trains we got? You -- wait a second -- not how many trains, how many vehicles? How many spares?

So these are all in that config summary. And then it's a quick thing, you know, I can't remember, 5 percent or 10 percent? Oh, 10 percent, you know. And 76 vehicles, not 80. You know, 80 is with spares. So you know these things and it helps you devise it.

Then it comes to staffing; then you've got a whole new thing. How many operators? Drivers, if you have drivers? How many people in the control centre? How many people in the maintenance facility? The shift work?

So that's all the stuff I used to do

was from that concept of operations and concept of maintenance, very quick, when a concept of maintenance; are you going to work seven days a week, 24 hours a day? Or five days a week, eight hours a day? Or five days a week, 16 hours a day, or weekends?

There's so many variations for each one that tells you for that one person do I need, three, four, five, maybe six people. That tells you have what your total count is for staffing. And that of course goes in to your money situation. How much is this going to cost to run? Lifecycle costs.

KATE MC GRANN: With respect to the configuration summary, in Ottawa, you've got the City is the owner; you've got RTG as the project partner with its subcontractors. Who would you expect to be the author of the configuration summary, one or the other? Both of them working together?

THOMAS FODOR: Not usually the guys who are constructing. RTG is the constructor. They're building and passing it off over to RTM.

RTM, anything like that would be the City of Ottawa; the owners should want to have

that. If nobody told them and they weren't sure or didn't know, then obviously they wouldn't even have an idea.

So it was just from our perspective, when we went in we realized there's no config summary, no concept document. The PSOS didn't call for SPFMA. These things to me was, you should have.

It doesn't mean it isn't going to work, but it makes it easier to understand how things are going to work and prepare everybody for it.

I'm not saying that they didn't have a training plan, and a test commissioning plan; they did. But the front end seemed to be a lot of things missing. I think they just jumped in and started building. We'll get her out and figure out how to operate.

I'm not saying with the concept of operations documents and the other one that things would have been better, but from our perspective it just seemed like it wasn't well-thought-out at the beginning, at the front.

KATE MC GRANN: And did you see any implications flowing from that, the fact that those sort of foundational documents were not in place?

THOMAS FODOR: You know, they had their signalling guy, signalling company. They knew what type of signalling they wanted. It was piecemeal, you know, they all seemed to have an idea.

My problem was that there didn't seem to be an overall system approach. People were, you know, doing their thing, and, yeah, it will come together, but I think that sometimes you get into problems trying to integrate and interface when you have these different elements out there doing their thing and not too many people see the big broad picture, you know, the overall picture.

KATE MC GRANN: Okay. So you've talked about the concept of operations, concept of maintenance, concept of safety and security, and then the configuration summary is documents that you would have expected to see when you arrived that weren't yet in place.

Are there any other documents or processes, structures that you would have expected to see when you arrived that weren't in place?

THOMAS FODOR: Not from what I was asked to look at. I wasn't into the construction schedule, so I, you know, I watched them build and, you know, I could see what they were doing.

I was moreover, you know, my role was to just watch as they were developing the maintenance organization and making sure that they had like an asset management plan. And some type of computer system that would monitor -- almost like an inventory control system. So they were doing that.

This is the type of stuff where I went through the listing and said, okay, you need this. Do you have this? Yeah, we're working on it. You need to do this. Yeah, you're working on that.

So I was making like a checklist and then they would, I would go in and see how are you doing with this? A lot of them were, like, it's going to take time to get this done. You need a maintenance plan -- when are you going to have it ready? A few months from now. Fine.

Then I'd review it and we'd comment on it. And there were a lot of documents that, other than that, that I looked at. Operations and maintenance related documents.

I've got a whole list I can provide you where I actually provided comments, as well as others. You know, for them to -- from a review point of view so they cut could put the final

version out.

So, you know, spares list. They were providing me with spares lists. Of course there were things that they were trying to get from RTG because RTG was supposed to hand over, but they were too busy building.

So, you know, there was difficulties, but ultimately from what I saw, they were getting their spares list together. I could tell how many, the quantities, and these were massive lists like you know, 4,000, 5,000 lines of things. And so spares list. Maintenance away equipment. We went through a whole list. Have you got this? Yes. Have you got that?

So I wanted to make sure, which my role was, to make sure that when this thing opened up there was an maintenance organization actually ready, trained, they had all the equipment to do the job.

And from what I saw, and -- there were -- the difficulty was that they were subcontracting a lot of things to, I think it was Alstom, who seemed to take a lot of the track work or maybe it was Siemens, I can't remember.

A couple of subcontractors, the main

subcontractor was Alstom, so they're the Alstom vehicle. So why wouldn't you let the builder be the maintainer?

But they were also doing other maintenance roles as well. What I found out was that RTM was actually a relatively small group of people who managed a lot of subcontracts.

And there's nothing wrong with that, because, you know, like, for example, elevators and escalators, you can't do that on your own. You have to go through an elevator -- a unionized type of thing. And usually the only ones who can do the maintenance, the detailed maintenance, are the elevator suppliers.

So I knew they had a contract with whoever they had for that, and I dealt with a guy who's doing the procurement and everything, so -- but again, I couldn't see a lot because a lot of it is, you know, not for my eyes.

That was just things they could show me here's the contract, but the details I wouldn't know how much it cost for the year and things like that. That's, you know, within the company itself and I didn't need to know that.

My role was to make sure they had that

in place, you know. So it was just -- the other thing was the inventory control system, that was a big one. We call it "MMIS", "Maintenance Management Information System".

And that monitors work orders, the inventory, spare parts list, when do you have to procure them. You know, when you're starting to deplete the spares, is there reordering?

It is a massive computerized system that sort of takes care of everything. It does the capital assets, asset management for like the 30-year. It will project when you need to replace certain things, you know, at a ten-year lifecycle or whatever. Very detailed.

And they had a contractor that was developing the system for them. So I mean everything seemed like it was okay from the maintenance point of view.

They had the maintenance staff from Alstom for the vehicles, and again, you know, when you set up a maintenance organization, the assumption is that things are going to be working as they were supposed -- as they were designed, you know.

You don't hire, like, if you've got 50

maintenance techs that you need to maintain the vehicles, your assumption is that these vehicles are as reliable as they say they are.

The problem that occurred was that the vehicles weren't as reliable, so maintaining them was becoming very difficult early on, because they broke down too often.

And, of course, when you only have 50 techs and you may need a hundred at that point to keep going, you start getting into problems. It gets into a vicious cycle. You can't keep up; it gets even worse. Then you're starting to hire but they're not up to speed, so things like that can become out of control.

And so I think that what I saw was that a number of items were unreliable and then, you know, you have problems because you've got a maintenance staff that's set up for what you assume is going to be for the reliability of the system that you expect, and I think that initially that wasn't the case.

Maybe they should have hired a few more people. I'm sure they did. Because I know I talked to them and they said, yeah, we've got a few more people because we know things when you first

start off there's always the unexpected things.

I think there was more than they ever expected, things that went wrong. And I think that's where things started devolving, where, you know, you try to fix something and you can't figure out why, or you don't have the time, then you send out another vehicle and that breaks down and now you have two vehicles that are having problems.

Yeah, I know they questioned me earlier on are you confident that these, the RTM is ready for it? Yeah, based on what I would expect the vehicles and the system would operate like, I thought they were in good shape.

But I didn't realize how unreliable some of the things were that we saw. Not just vehicles, switches, things like that. They were always out of sync and switch goes -- you can't get through. That just stops everything.

You have a great vehicle sitting there and you can't get through because the status is lost and you can't drive through.

KATE MC GRANN: Let me ask you some follow up questions on what you've just said.

So a couple of things. You mentioned that RTM was subcontracting a lot of the

maintenance to Alstom and you mentioned they would be performing maintenance on the trains. And then you said something like, they were also doing other maintenance roles.

Did you mean Alstom was also taking on maintenance roles in addition to the trains?

THOMAS FODOR: Alstom, yeah. I think what happened is Alstom more or less took most of the systems and then they would subcontract to, like, Siemens, who did the power.

So it seemed to be like this levels of subcontracting, again, nothing wrong with it. I think it's just that RTM ultimately seemed to be just a small group of people, there were a few people who were doing, got to change a light here, why don't we subcontract that?

Or plumbing fixtures broken, the guys could do that. But there seemed to be a small group of them. And then they had all these subcontractors under them.

So you had the small RTM group, and then below it, it was Alstom, and some other subcontracts like elevator. And I remember Alstom had track work, comms, you know, signalling -- no, sorry, not signalling. What was the company,

signalling? I think it was Thales. Again, here's the suppliers, why would you not give it to them?

It wasn't just Alstom. Alstom had a big one who was vehicle. I'm almost positive it also had track work but that shifted down to Siemens and some other track work companies. I never -- I can't remember exactly how it was set up.

So RTM itself was a relatively small group of people who were sort of running the show and then it was all, you know, flowed down to others.

KATE MC GRANN: In terms of how the information that you were reviewing and commenting on got to you, did it come to you through RTM or did it come to you directly from subcontractors? How did you receive information?

THOMAS FODOR: That was the difficulty, I seemed to have to always go through RTM. I did talk to Alstom a few times but they're really, really busy. There was a lot of turnover as well. They're under pressure to get the vehicles built and tested, so the last thing they want to do is see me.

And most of the stuff I got from -- not

that they didn't want to. But you know I did go over and I did get some information from them, but basically, my role was to monitor RTM and they were the ones who came up with the overall maintenance plan.

So it was their responsibility and now from there they could say, well, we're subcontracting this, we're subcontracting that. But their maintenance plan ultimately had a lot of other maintenance plans thrown in from the elevator guys, from the vehicle guys, so their little maintenance plan ended up really thick because it was other subcontractors adding their stuff in. It's one way to consolidate your maintenance plan.

So a lot of times they just say, oh, elevator maintenance, refer to Appendix D. Okay, elevator guy, there it is. For vehicle maintenance there's that thick vehicle maintenance from Alstom. From signalling, another maintenance plan from Thales. And that's typical, you know.

Nowadays it is. 20, 30 years ago it wasn't like that. They used to have a large maintenance organization that you took most of the roles on. Now it seems to be more like just farm it out to these guys, let them do it.

KATE MC GRANN: And the work that you're doing, reviewing RTM's maintenance plan and things like that, was your role also to take a look at the way in which it was breaking out its subcontracting responsibilities and whether that looked feasible, workable?

THOMAS FODOR: Oh yeah, yeah. I had no problems. It was just difficult trying to find out how many subcontractors there were, even for IT there was a subcontractor; then for comms, radios there was a subcontract.

You know, you can have a lot of subcontracts or you can have a few. In general, I didn't think there was anything wrong with what I saw. The subcontractors were legitimate subcontractors; they weren't mom and pop shop type of things. They seemed to have everything covered.

And as far as I'm concerned, if the system was sort of reliable, as it should have been, I don't think they would have had a problem maintaining it, you know.

KATE MC GRANN: You mentioned the MMIS, I think that's the Maintenance Management Information System?

THOMAS FODOR: Yeah.

KATE MC GRANN: Is that a live system? And by that what I mean is, is that a system that you're expecting various players in the system to input information into on a regular basis when the system is in revenue service?

THOMAS FODOR: There are two MMISs that work together. Alstom, because they had such a large maintenance organization and maintenance elements in there, vehicle and all the, you know, subparts to it. And then there was RTM's.

And again, you know, I left when they started operating, so I never fully saw how they integrated, but I did see and I did understand that Alstom's was a different MMIS. RTM's was different, because Alstom had their own from France.

So he couldn't tell him you can use this one, when we've been using this for 30 years, but there was an interface element there so they can pass information back and forth. Made it a little more complicated as opposed to having one, you know, architecture and one software platform.

But you couldn't ask Alstom to, say, dump everything you've got. They had information, you know, and the way they were structured they

were familiar with it.

What RTM did was, they had a contractor come in and make sure that this worked together with that. And then they sort of hopefully seamlessly passed information back and forth. And only information that was allowed to go through, not, you know, stuff like employee's wages and stuff like that.

So there were certain things you could extract from there. But anything related to work orders, the type of failures, you know, history of the vehicle, that would have been passed over to RTM so they would be able to provide the reports as to how the maintenance was working from month to month.

KATE MC GRANN: Okay. You talked about how a maintenance program, please tell me if I'm paraphrasing or summarizing this inaccurately, but you talked about how a maintenance program you're designing it with a view to service a reliable system?

THOMAS FODOR: Yes, yeah. Because the PSOS normally we'll say, we want a reliability of 99 percent, and RAMS targets.

RAMS is "reliability, availability,

maintainability and safety", RAMS. So you'll hear that a lot.

And normally in a system you will have targets. I need a RAMS target of 99.5 for the vehicle. 99.99 for the signalling system. 98.5 for the power distribution system.

And then to do that, they know that if this vehicle -- and overall, that would give you a system availability of 99.3 percent, you know. So you can tell from those numbers, how many hours you can be down in a year, systemwide, and how reliable your vehicle is.

And when you're designing the vehicle you would say, I know that, you know, the doors have a reliability of 95 percent, or 98 percent. Then you break it all down, all the elements, and when you put all those numbers together, it's got to meet that 99.5. It's a little bit -- it's a lot of numbers that come together.

One thing I don't recall ever seeing in the PSOS was reliability numbers. I don't know if there was an availability number, it may be, but I don't recall seeing reliability numbers.

And I noticed that because I questioned that at Eglinton as well. Where are the

reliability numbers? And they basically said, well, we approached it a different way.

There's a payment mechanism, which is another element that's -- and I don't remember if Ottawa had a payment mechanism. Maybe, I'm sure it did.

Where you're not reliable on reliability and availability numbers, you're looking at this payment mechanism that has penalties if you don't meet certain things. It is a roundabout way of looking at it to say, if I fail more than this many times I'm going to get penalized a thousand dollars a day.

Of course, the higher the number, the more you're worried about it. If it was $10 a day who cares? So that sort of goes back indirectly so you can then look at it and say, well $10 a day, do I really care if this thing is reliable? No. Or, as reliable as, you know, I think it should be. Or can I make it less reliable and therefore I can make it cheaper.

The more reliable, the more costly. That's what it all comes down to.

So the payment mechanism, it is a new way of looking at ensuring that you have a reliable

system. And it's something that I only really got involved in in Eglinton and then with the Ottawa, now with a few other ones. It now seems to be the new vogue thing. This payment mechanism. To me I'd much rather see the reliability numbers.

When I worked in South Africa on Gautrain we actually could actually forecast our penalties just from if we didn't meet the system availability number. I can tell you if we got 98, this will cost us this much. If we got 97.5 or got down to '93 you might as well close shop because you're losing money left, right and centre. There is a much simpler way of doing it than this payment mechanism. They get awfully complicated. I never liked it. It's an indirect way of determining what your reliability is.

Again, I don't know whether -- I tend to like the old way, the RAMS, not the payment mechanisms.

KATE MC GRANN: So the RAMS, where would you first expect to see it? Would you see the RAMS in the PSOS --

THOMAS FODOR: Yeah.

KATE MC GRANN: -- then expect to see them play through?

And how do they operate to ensure or incentivize reliability service?

THOMAS FODOR: Well the RAMS numbers, like a system building number, 98 percent, that basically says 2 percent of the time of the whole year you can be down, but you won't get penalized. But you better be up for 98 percent of the time.

So you can calculate how many hours that is, you know just by doing the simple math. And then say, on a weekly basis, on average that means we've only got a half hour that I can be down.

So that drive, the reliability of everything, like if your switch goes down for an hour you just screwed yourself royally if that happens every day. If a vehicle fails, if you can get it out of there, put in another vehicle, that doesn't hurt. But if you stopped everything for 20 minutes you just lost 20 out of your 30 minutes.

And this is where the concept of operations comes in. Like the train fails, what do I do? Do I go to the end of the line? Or do I have a pocket track where I can get out and just leave it there?

Or do I carry on for another round trip

or so because the failure rate is not a Level 1, it's Level 3, and our prediction is you can still stay out for two, three hours before you're getting in a risk.

So the RAMS, RAMS will dictate the cost of the system. I mean, if I said I want 99.999 percent availability, system availability, you can be sure the cost of that system will be sky high because you're basically saying I'm going to make everything redundant. If one thing fails I can still keep operating.

That's what I said about the UTO, and ATO, UTO, everything is redundant you can't afford to have something break down and the train stops and you're in the middle of nowhere with no driver on board.

So it all sort of ties together. But yeah, the RAMS normally is not -- numbers are normally in the PSOS. Actually come to think of it, they did have some numbers, but not all of them, because I -- was that Eglinton? No that was Eglinton.

Because I have a only had a couple of numbers, and I said why can't you figure out the other numbers, because I can. And they didn't have

the other numbers. I said this is simple math. I can tell you what the other availability numbers should be then. I don't remember seeing it in Ottawa.

Again, I can't remember.

KATE MC GRANN: Okay.

THOMAS FODOR: But it was something to check, if there's no RAMS numbers, I would find that -- that's a driver for design, the RAMS numbers for signalling, for vehicle, for switches, for everything, comms, you know the big killers on vehicles, doors. Because if the door doesn't open or close, you're not moving.

Obviously the signalling system and there's no platform screen doors in Ottawa, yeah, there are, so they can be a reliability factor, too. That's just on the other side of the train doors the platform screen doors are a lot of times unreliability, or other factors like that that could drive things.

KATE MC GRANN: Okay. So coming back to the notion that the maintenance program is designed to maintain a reliable system; is that accurate?

THOMAS FODOR: Yes.

KATE MC GRANN: And was it the case from what you saw that the maintenance program that you were working on, was designed to work on a reliable system?

THOMAS FODOR: Well, when you're supposed to have, I think it was 16 or 15 trains out there, and you can only get seven out through the test and commissioning phase, we've got a problem.

They could never get the number of trains out that they needed. So, you know, that was automatically -- either it was poorly built and designed. I think this was a vehicle that had already been designed and built many times, but you're building it in a new environment. You know, it's not in France, it's in Canada. I don't know if they had the right people assembling them.

They were building it in the maintenance and storage facility, which I immediately said, are you guys crazy? Because I said, what happens if you have an endemic failure like you find cracks in every bogie? You've got to change all the bogies, because you don't want any serious accidents.

I worked on a system where that

happened and they had to take every train and within a week or two, I think it took almost a month but they had to replace all the bogies, took them time because they didn't have enough bogies. Secondly, you couldn't run the trains.

They weren't allowed to run out there with these cracked bogies and it took a lot of time and space to get all these trains in and change them.

Well, if you're building all the vehicles in the maintenance and storage facility, where are you going to do one of these -- oh my God, all hell has broken loose and now I've got some major work to do and you've got no place to do it.

I think what happened is, ultimately when I first went there, I was stunned. Like, you've got to be kidding. You don't have a maintenance facility. Well, these are proven vehicles. Well, now it's proven to be not true.

But they did, at the time, start looking at building another facility in the back, in the ONSF where they were, which gave me a little -- okay I have a little breathing space. If something happens you have a little more space.

Originally I don't recall them having that other building. I was stunned when I heard they were assembling in the maintenance and storage and there's only one maintenance bay. So to me it was like, this is crazy.

I think the assumption was that, you assemble it, vehicles are proven vehicles, therefore shouldn't be as many problems. Even if we only need one maintenance track, you know, for maintenance, all the vehicles aren't going to be anyway. So as you trickle into the system, then we'll have more space in there. And By the time the last vehicle goes out, you have all the maintenance bays. Theoretically it sounds right, but that's not the case usually.

I think outside of -- I think that wasn't the big problem. The problem was that when I looked at the numbers, you've got a staff, there's a certain number of vehicles.

You can sort of do some numbers and say, that looks about right. But it's -- and I remember we talked, I talked to the RTM manager and he said, we do have extra people, because we know that initially you're going to have, you know, more problems than you expect.

It's like a bathtub curve. At the beginning you have more problems, then it comes down, then you've got a long period where you've got fairly stable maintenance, activities. And then it starts going up again when things start really breaking down. So they did have more people originally.

But I think it was still overwhelmingly, there was just so many problems with the vehicle that they could never get even three quarters of the vehicles out. I mean if they needed 15, I don't -- I think they finally managed to get 12 or 13 out, you know, weeks later. But originally, I don't think I saw more than six or seven, maybe eight vehicles. You know, to me that's yikes, that's scary.

KATE MC GRANN: At what point in time is this happening that they're supposed to be getting more vehicles out but you're seeing six, seven go out?

THOMAS FODOR: Testing and commissioning.

KATE MC GRANN: And can you describe to me generally in time when that was taking place?

THOMAS FODOR: Testing and

commissioning, there's two phases. There's the one where you test a section out to make sure its signalling works and everything works.

And then when construction says we're finished this area, now you carry on. That was a bit of a problem because construction was behind, and you've got to remember, they had a horrible winter and the winters were bad at that time, too.

So I mean, you've got to feel sorry for these guys because every weekend there was some blizzard and, you know, it would stop construction, and then that would stop T and C, T and C meaning testing and commissioning. There were several months there where they were just lagging behind because the weather was just absolutely horrendous.

But the problem was during the testing and commissioning was, there was a lot of arguments between construction, RTG and the operators, and RTM, trying to get track to test and make sure that the signalling system worked and everything went smoothly.

Because construction was lagging, and that holds everything up. But, you know, you've got six months, this date stays, you know, where it is. And the construction is going on, and there's

problems and they've got to go back and your testing and commissioning is getting squeezed down to the point where you're just doing, quick, yeah, it looks okay, we're going to do this.

You really need a good six months to do it. You start losing time and it gets critical. Then at the end you've got the trial run plan. The trial run where you're actually running the system like, starting at 6 o'clock, you've got so many trains. You're running the schedule.

Well, I got down to, I think two or three weeks. It should be two months easy. So a lot of these problems of construction and getting things done and weather not cooperating and holding things back, just squeezed the schedule.

I know there was one thing where they -- one of the first things when they had the revenue service and someone held the door open, because the walls were a little bit short, and everything stopped. The vehicle just stopped.

That proved to me that there wasn't enough time to really test everything out. Normally, someone like me would go out there and do that deliberately. Let me just see what happens if I hold this door. You know, they never did that.

And there was a big problem they didn't understand why it stopped everything. And it's just a good example of it wasn't really tested the way it should have because they didn't understand what the response would be if you held that door, and, you know, things like that.

So certainly the testing and commissioning was too short. Trial run plan, I don't think they ever -- well, in my view, I don't think there was a day in two weeks that they actually passed.

What they did was, they said, well, it worked for, you know, five hours, not the 12, but that five hours it worked well with, you know, three-quarters of the trains that we're supposed to have. But those, you know, 10, 12 trains worked well for five hours, so success.

KATE MC GRANN: Let me stop you for a second, because I have written down a number of questions to ask you about what you've said. And then I will come back to the trial running because I do have questions about that as well.

THOMAS FODOR: Okay.

KATE MC GRANN: But we had started that part of our conversation with me asking you about

whether you're designing a maintenance plan to maintain a reliable system.

And what I would like to ask you is, is that the starting point and is that what you expect RTM to be putting together? And that's what you were evaluating for, will this maintenance plan achieve effective maintenance of a reliable system, right?

THOMAS FODOR: Yeah, you design for the system. If they say it's going to be -- if someone told me it's going to be an unreliable system, then I would have said the number of staff you better double.

KATE MC GRANN: So that's actually -- go ahead.

THOMAS FODOR: Well, that's the problem. I mean if someone told me, look, this is a totally brand new vehicle, you know, it's not even a proven vehicle. The first thing I would have said was, oh, God. Don't design for what you typically would see in other systems. You've got a vehicle that's not proven. Therefore, you better pad your maintenance staff, okay?

We were told, the Citadis vehicle, they've built hundreds of them, which they have.

One Citadis vehicle is not exactly the same another other one in another city. They all have their little quirks.

Again, if you're building it in a plant and it's that same crew that's building 200, 300 vehicles, that's different than saying, oh, we're going to built 70 here and just get a crew together and put it together. It's not just the same then.

Perhaps I should have realized at the time that this was not going, and at the time the testing was going on. Everything seemed to pass. Yeah, because they didn't test it vigorously until the passengers got on board and started holding doors. Why would you not test to see that to see how does this react?

As I said, it's a given that you always allow for more people, maintenance staff at the beginning, because you know you're going to have more problems. When you can't even get half your vehicles out, day by day, you know, from one day to another that's a problem now. Now you realize, oh, we've got problems. And it wasn't just the vehicles.

The switches, the switch contacts, they had problems right, left and centre with them. I

never did know what the problem was. But I suspect and I know that a couple of us were thinking that the ballast that they were using, ballast being the rocks that the tracks are on, I don't know when I went out there I looked at it and I thought, this is not the typical ballast I would see. It was already crumbling. It was --

KATE MC GRANN: Did you raise that with anybody when you saw it?

THOMAS FODOR: We talked about it. It was already there. I just said, oh my God, I don't like this. Again, I'm not a track expert. But I've seen enough where I, you know, we went out and the maintenance guys saw what had already been put in.

Again, it's not the maintenance guys; they're only inheriting what's there. I thought the ballast was -- the cheapest stuff you can get. Not the good quality ballast.

What happens with that is that this thing will -- instead of, you know, the grey ballast you see, it's almost like limestone, you know. It's gravel but big chunks; that's what they use for ballast.

This was like granite, like broken up

granite, but granite is quartz and feldspar and they do crumble. If it's a sheer grade, a wall, it's hard. But if you break it up it's not a solid mass like the limestone is.

It's more like, under pressure you can crumble, the quartz will break off, feldspar. I'm looking at this track and all this pink stuff and I'm going, I don't recall seeing ballast with the granite or the granite type of ballast.

But I think what was happening was that this thing -- and we noticed that because we walked the track. And even the maintenance manager said, this thing has already got -- it's very dirty, which means there's a lot of crumbling going on inside. Which means now you've got to clean it. If it keeps crumbling it's also settling. And I'm wondering -- again, this is just my own thing.

I was thinking because these switches are very sensitive on the switches, so if one side is crumbling a little bit more than the other, they may be on super elevation. If those two points don't, if one switch down it doesn't contact anymore and there's no more status.

And again, I'm not a track expert, but I just looking at what I saw, I did not like the

ballast. I don't know why they want ballast. To me an LRV system in the middle of the City I would go with concrete pad. That's what I always work with in any system.

And usually in the yard you'd use ballast, but on a main line it was always a concrete pad. They didn't have that here; it was ballast. And I gather it's cheaper, but again, you get what you pay for.

KATE MC GRANN: Did you work any of your observations about the ballast for starters, into -- did you take that into account in your review of the maintenance plan?

I have seen this ballast, I have concerns that it's crumbling, I have concern for disconnect that could affect the switches and therefore I'm going to look for some accounting for that in the maintenance plan; does that come into play at all in the work that you're doing?

THOMAS FODOR: No, I'm not a track expert. They did have ballast regulators and things like that to deal with dirty ballast. And they had subcontracts because some of this equipment is massive.

All I kept thinking was, you're going

to probably be cleaning this a lot earlier than you expected. But that doesn't mean that you wouldn't start the day and say, hey, maybe for the first two, three years everything is going to run well.

But this was already during the testing and commissioning things weren't working. So it may have been also improper installation of switches. Again, I'm just saying I didn't like what I saw out there with the ballast, but they did have equipment for cleaning ballast and replacing and I thought well if you have to replace it, don't use this crap, get some good stuff.

But that's part of the maintenance plan. You have that type of equipment. If you have ballast you need a ballast regulator, you need a ballast tampering. These are massive pieces of equipment and what they already had was contracts with outside, like DNR and other companies.

Okay, the ballast may not be what I would like to see. At least you've got equipment and maybe I would have expected you not to have to do any for eight years and you may have to do it in five. That doesn't mean it's not a good system.

KATE MC GRANN: Because you've accounted for how to maintain it and everything is

there ready to go if a problem comes up?

THOMAS FODOR: Exactly, yeah. You know, whether I mean -- ultimately, it will cost like over 30-year period, if you only have to do it three or four times instead of six times replacing ballast, obviously that's an added cost.

So, again, if the company decided to cheapen out in the beginning, you're going to pay more for it at the end. That's part of the deal. You put it in cheap. That's going to cost you more to maintain, may cost you more at the beginning and cheaper at the end.

So it's just a trade off, really, you know. And I don't think that was any, that was the issue for the opening type of problems they had. It was really more I think, vehicle related and some equipment, like switches, they just seemed to have problems and I wish it was that, because they could have easily tamped in that area.

But I think it was more than just that. I think it was probably other, maybe not proper installation. You're an installer right, haphazard. It will work sometimes; it won't work. Again, I wasn't involved in that at all.

KATE MC GRANN: In the work that you're

doing reviewing the maintenance plans, we've -- I keep coming back to this, because I have a couple of more questions to ask you about it.

THOMAS FODOR: Yeah.

KATE MC GRANN: The idea that the maintenance plan is prepared to maintain a reliable system.

It sounds to me like throughout your time on the project, you begin receiving information that suggests that the system may not be -- it's not reliable at the time; fair enough?

THOMAS FODOR: No. No. At the time, you know, that was just one observation when I went out. I just didn't like what I saw and I thought, uhm-hmm, that's, you know, that's one element that, you know, I remember saying when we were out there.

I said, well, you guys may have to clean this earlier than you'd expect. That's not a problem, they go, yeah, probably, but that's it.

Operationally, there was a problem, in that, you know, the train would break down. Then they wouldn't know what was wrong with it. Then the train would stop, someone would open the door and it wouldn't go anywhere.

And, as I said, then there was supposed

to be 15 trains up there, they could only get ten out.

I'm not a vehicle expert, so I don't know how -- until you see the testing and commissioning going, but again, that got shortened so much that -- and, you know, yeah, it passed this test, okay.

Well, I'm not one of the testing and commissioning guys but you heard it's later towards the trial run that they realize they can't get the trains out. What's the problem? We've got this problem, we've got that problem.

Then they lost three or four maintenance techs, so they had to hire more people. So just everything seemed to just come down on them, and then it was just, you know, sometimes everything comes together and bad timing and everything comes together.

But from my perspective, now I did mention, because we did watch some of the guideway guys, maintenance guys out there, and there were a couple of times where I said I think you guys are going to need more people. And just to be on the safe side, you know.

But even there, the problem at the time

was they couldn't get out there because there was still construction. So you know when you start to build something and you're supposed to maintain it but it's not ready yet, you've got these guys sitting around and they can't get out there. And when they do they don't have enough time or the construction group comes back and they've been delayed or delayed getting out there.

I found construction really hindered a lot of things. The weather certainly didn't help, that was just a brutal winter for many months there that held a lot of things back.

KATE MC GRANN: Which year was the brutal winter?

THOMAS FODOR: Oh geez -- 2013.

KATE MC GRANN: You started in 2015 so...

THOMAS FODOR: I'm thinking. Just before the pandemic started, that was the last time I was up there, that winter. So that was 2019?

KATE MC GRANN: I believe that you were involved in the project from September 2015 to October of 2019 if that helps.

THOMAS FODOR: Then it was the winter at the beginning of 2019, yeah. You said '19,

right?

KATE MC GRANN: You end in October 2019 is what I believe and the system goes into revenue service in September of 2019.

THOMAS FODOR: Yeah, okay. The winter before that. Yeah, the spring -- the winter and spring there, 2018, 2019, that was a critical time for them and construction really got delayed. Testing really got delayed there.

And then they went through with this phase of the testing and commissioning. I'm not part of it. I'm just hearing, things are passing. To what degree and how strictly they were doing the tests, I don't know.

Because, again, I'm only there to look at, this is what you need for this many vehicles assuming these vehicles are going to operate as well as they're supposed to.

Yeah, you have the little buffer, you have the wayside people that are doing it, but they can't even get on to half the tracks because they're still considered construction zones.

And a lot of these things will only evolve not that opening day, it will evolve later on where they usually would have time. If you

start a system, it's like a new house. I get a new house you've got a few little problems. You can see the roof deteriorate and get ready for it and say I've got to do there. Or you spring a leak and say I better to change the plumbing.

You don't expect it to be I need a new roof and I move in.

Which is almost the analogy of what I'm doing with what happened here. All of a sudden everything was not working. Switches weren't working. They're brand new switches why not? What's the problem? They couldn't figure it out.

Trains aren't working. What's the problem? Well there's this, this, this, this a number of issues that were constantly plaguing them.

You know, then maintenance plan, they had it all ready and of course they had, I can't remember if it was a good number of maintenance techs that left. I think they were being overworked I think after time they just had enough. Then all of a sudden you don't have enough people.

KATE MC GRANN: When did the maintenance techs leave?

THOMAS FODOR: I can't remember. It

was just before the trial run because all of a sudden they had to hire some more people because a whole group of them left. But I can't remember.

It's just prior to the trial run and they were scrambling to get more people. They were bringing more people out from France if I'm not mistaken. They kept saying, these guys we're bringing in they've worked on these vehicles before, so there won't be any problems.

But again, you can only work on so many things on one night. If there's five things of fixing you can only do two and you try to take it out and it craps out again, bring it back in and we don't have enough vehicles.

KATE MC GRANN: At any point were you or to your knowledge was anybody at RTM asked to revisit the maintenance plan in light of potential reliability issues that may be experienced when going into revenue service?

THOMAS FODOR: No.

KATE MC GRANN: By that I mean things including, here is the information we've got about the reliability of the system right now. Build out the plan to account for maintenance if it continues to look like this?

THOMAS FODOR: Not in that direct way. I think they were looking at, they realized that their staff couldn't keep up. And they were looking for, you know, additional staffing to keep going, but the problem then is even if you maintain the vehicles if they broke down while you were in service, you know, operationally that was the problem. The reliability wasn't there.

You can only fix the thing so many -- if you fix it and five minutes later it breaks -- I remember vehicles coming out and going, yeah, you've got the sticks coming out to the main point ready to go and crapped out again, you have to bring it back.

KATE MC GRANN: When do you remember seeing that happen?

THOMAS FODOR: During the trial run.

KATE MC GRANN: During the trial runs. When did you see them -- I'll ask you the question then we'll clarify who "them" is.

You said you saw them trying to build out their staff. Are you talking about RTM?

THOMAS FODOR: Alstom.

KATE MC GRANN: Alstom?

THOMAS FODOR: Yeah, just basically

saying, guys you have a problem. Your vehicles aren't reliable. What can you do? They're scrambling trying to keep up and get more people in the evening shifts but I remember, yeah, several times when I was there for the trial run.

And the train would come in, it was already late, they've got it running. Came out, stopped, get the driver on board, crapped out, you oh, take it back in another 20 minutes later another vehicle came and that crapped out.

So they're going, okay, something is wrong here. Why are these vehicles so unreliable? That's what I'm saying.

If someone told me these vehicles are going to be 80 percent reliable, that would be a different story than saying these are proven vehicles. They run all over the world. There's nothing wrong with them. They're reliable. They're not new.

Because if it's unproven, I would have looked at it a totally different way, you know. This was proven technology. It was a proven vehicle. They built hundreds of them. Okay, well, you know what am I going to say? Triple your staff? Someone is going to say no, because we

didn't budget for it. What do you do with two-thirds of them after lay them off? You can't do that.

KATE MC GRANN: Who gave you the instructions or the assumption to review the maintenance plans on the basis that these were proven vehicles?

THOMAS FODOR: It wasn't on the basis they were proven. I just knew they were proven vehicles. I mean, I didn't know anything about Alstom, I mean that was one of our arch enemies from Bombardier.

We were told these are French vehicles and they've built hundreds of them and, you know, it wasn't like this is a new vehicle; it's never been proven. Most systems won't allow you to put in an unproven vehicle, although there are some, because they want new technology. This was basically a proven vehicle.

And in that sense, again, I'm not a vehicle expert, when I see a vehicle and I did check to see Citadis, they're all over the place, they've built a lot of them. It's not a new vehicle.

There may be slight, small differences

but I'm not a production expert and realizing that may be the way they assembled them and people they had, I didn't get into who they hired.

And again, the assumption then is that you have a proven -- a reasonable tested commissioning period. You're building this maintenance plan and hiring. You're starting nine months before; at that time things are still growing smoothly.

It's only later you realize, well, they really haven't tested that well and they've got constant problems. Now the trial run they can't even get vehicles out. You're already too late if all of a sudden they say, we need twice the staff. Well, good luck. Go and find another 25, 30 maintenance techs to fix this thing.

KATE MC GRANN: So when was it that it came to your attention that this is not a proven vehicle, we're not getting reliable service. When did you become aware of that?

THOMAS FODOR: About the trial run period.

KATE MC GRANN: Trial run period.

THOMAS FODOR: You have to realize I didn't work there all week. I was there maybe once

a month, maybe twice at the most.

KATE MC GRANN: So you're not being fed the results of testing and commissioning on a regular basis to inform your own work or anything like that?

THOMAS FODOR: No. And if it was really a concern beforehand, it would have come up. And, you know, we would have probably made the changes at the time. But, you know, when we're making the maintenance plan that's eight, nine months ahead of time because by then you have to have a maintenance plan, I think six months before running any service, it has to be done, they start nine months before.

Six months before it's done they have all the equipment. Now they start mobilizing and training. Now it will take six months to train all these people. Last six weeks, you realize, holy shit, these vehicles are nowhere near where you expect them to be. You know, now you're scrambling and there's no way you're going to catch up.

Sorry about the swearing as I forgot you're...I just realized the transcript.

Okay, you realize as time goes on. When we're in the control centre, I'm watching

things I thought oh, God, this is not working well. Maybe it will be better tomorrow. Three weeks later it's still like, this is not getting better.

We knew at the time this was not good, you know.

KATE MC GRANN: So before we go to trial running, just a couple of more questions here. The assumptions that you were operating on as you were reviewing the maintenance plan and things like that, did they come from the City? Did you put them together based on what you knew about the system? How did you understand what you were reviewing the plan to maintain?

THOMAS FODOR: Well first of all, I look at what's the technology, okay? Signalling system, Thales. I know Thales so I knew the signalling system, no problem.

Vehicle, Citadis they built hundreds of them, so it's not a new unproven vehicle. There's a driver on board, actually there's a driver, too, I don't have to worry about failures because there's a guy that can drive the vehicle away. That comes under the concept of operations.

I did not know about the track ballast until I went out one day, but, again, that was just

my own gut feel and, again, I don't think that caused any problems at, in the initial things. It may later on but that, again, that's just my -- I'm not a track expert I maybe shouldn't have said anything, but just my observations, okay?

So when you look at it, like any other time, like for Austin, Texas right now, how many vehicles do we have right now? This many. Am I assuming they're going to fail every five minutes? No. My assumption is it's a proven vehicle. It's going to work the way it's supposed to, if there are failures, rail failures then I have a plan how to get around it.

Maintenance wise, you look at it and say for X-number of vehicles I need this many people, I need five technicians, ten of these support people, blah, blah, blah.

If I triple that, I know immediately somebody is going to say, are you crazy? I'm going to say, that's because I don't believe the vehicles are reliable and they're going to break down every five minutes. They'd fire me.

First of all, that's the wrong assumption. Secondly they're going to be reliable, for sure.

Okay, so I'm only going on the assumptions that I've used for 40 years. I don't set up immediately for a poorly designed, unreliable vehicle. It just -- unless someone tells me so, I will set it up the way I set up every other system which has worked well. Except for Ottawa.

KATE MC GRANN: At no point during your work on this project were you told: Prepare for the unexpected. Prepare for a less reliable vehicle, prepare for anything like that?

THOMAS FODOR: No, well, nobody -- I mean there's always contingencies. You have risk management contingency and that's always added in for maintenance planning you have contingencies.

You always know no matter what they say, oh, you only need five of these, but I'll buy ten especially if it's a critical part, I'll buy double just for that purpose, because you need that back up, you know.

You don't want to -- there's gut feel sometime and we've done that many times where we've looked at the spare part manual, you know what? Two? No, let's get five.

Why did you do that? Because I've been

doing this for many years. I know that's going to be a problem if that is.

But nobody has ever told me that the vehicle that you're dealing with is going to break down and you can't, can only get half the trains out.

That's why we allow for 10 percent spares. I know a lot of places that allow for 25 percent. SkyTrain we did a 5 percent. Virtually there was one train in the maintenance facility; all the others were out there. I had people say you can't do that, and I say we did it.

But typically, in this industry, ten is about the reasonable number. But it can go as high as 20, 25.

KATE MC GRANN: In this project, what was it?

THOMAS FODOR: Certainly not 25. Maybe ten percent. I wish there was 25, but again, it's money. Someone better pay up if you've got that many extra trains, you know. Then you need drivers for that, so it's, again, I think it was ten percent if I'm not mistaken.

KATE MC GRANN: Going back over some of the things that you said just to clarify them for

the record so when someone is reading the transcript later they'll understand what's happening.

You were talking about the schedule for testing and commissioning being compressed and becoming shorter. You said one date that stayed the same, then the testing and commissioning period getting shorter and shorter. The date that stayed the same and didn't move; what date are you referring to?

THOMAS FODOR: I think that was the opening day. I think that actually moved as well a couple of weeks because it was supposed to be the end of the -- beginning of September, end of September. They went a couple of more weeks because they couldn't pass the trial run thing and we knew we were getting really compressed, you know, in time.

The maintenance organization was there and ready. I watched them go out at night checking this, checking that. They went into the maintenance building; they're doing this. Yeah, this vehicle will be ready.

As I said, the problem was so many times, when it came to, okay, 5 o'clock, vehicles

are coming out, we'd be getting a call we can only get this many out.

You know, there's only so -- or if they got there, they crapped out either on the way out or somewhere on the main line and they'd have to bring them back in.

I do know that for the trial run, I don't recall a day where we had all the trains that we needed for normal peak operation. I mean, if they for evening period, where you had half the trains, yeah they had enough. But peak, couldn't make it.

KATE MC GRANN: When was the maintenance plan finished; do you remember?

THOMAS FODOR: Oh geez. Well, started draft, when I got there. It was shortly after that, then they have to have the maintenance plan done; I think it was six months before revenue service if I'm not mistaken. I can't remember.

But it was well before revenue service we had to have a finalized maintenance plan.

I think there were two or three iterations because I commented on the first one, you need to expand on this. Then the last one -- the I think it was the three months. The last one

was a real detailed one where they had all the subcontractor maintenance plans in there.

So then it became a real thick one; that's where I had everything in there. But that was just a formal, you know, here is the formal maintenance plan. I knew what was coming anyway because I knew what Alstom's maintenance plan would look like and everything else, but it was not consolidated at that time.

And you know, for example, all the maintenance away equipment had already been provided and had been, you know, stored here and there on the tracks and in some cases already used.

KATE MC GRANN: What is maintenance away equipment?

THOMAS FODOR: Rail grinding. Rail grinders. Like tampers for the ballast. There's a number of ones. The snow clearing equipment. Anything to make sure that, you know, switch machine cleaners. There's things -- the brushes and to clean out the gravel and then you've got welding equipment, for welding rail together.

So anything that you use for maintaining the trackway itself. Ballast, the track itself, welding track together, as well as

cranes, you know, you've got these heavy things for the trailers, steel wheel trailers that you load equipment on.

Like if you have to change a switch machine, that's a pretty bulky thing, you get a crane put it on a skinner then you take it out there, take off the old one pop it back in. You need a crane to put it back in place.

Then you have the smaller hand tools and things like that for pick shovels and things like that. But there's tools.

So maintenance away equipment are fairly large pieces of equipment. And high rail, I don't know if you've seen them, you have the rubber tires but then you have the little steel wheels on the CN pick-up trucks.

They can drive on the highway and they go on to a flat area and they can lower the steel wheels and drive on the tracks. Those are called high wheels they had a number of those as well.

KATE MC GRANN: It sounds like it's sort of all the maintenance equipment that may be required to go to a problem and maintain it on site as opposed to bringing it back to the maintenance and storage facility.

THOMAS FODOR: Yeah it's fixed in place. You got to go there and fix it or replace the part and then come back.

KATE MC GRANN: You mentioned not -- sorry. I see Ms. Caputo coming on the screen.

-- OFF THE RECORD DISCUSSION --

-- RECESS TAKEN AT 3:41 --

-- UPON RESUMING AT 3:50 --

THOMAS FODOR: Just on the break there, I had two thoughts that I wanted to pass on to you if you don't mind.

KATE MC GRANN: Please go ahead.

THOMAS FODOR: You were asking about the, you know, why did I think the vehicles were such good vehicles and everything? And I forgot to mention that when I was working on Eglinton, there was a problem with Bombardier with their delivery of their vehicles. They were late, late and late and late.

And Metrolinx decided that they were going to purchase the Alstom Citadis vehicles, the same one that were in Ottawa. This was before I started working on the Ottawa.

And we did a huge study on the differences between the this vehicle -- the

Bombardier vehicle and the Alstom because they're different dimensions and you have to make sure if we were going to get the Alstom Citadis vehicle, that the alignment that we had would work with it.

But for, I think it was about three months that I worked with a couple of other people on the assessment of one vehicle versus the other, it was basically, you know, and the push was really to get the Alstom Citadis vehicle -- there was never any argument or discussion about how unreliable.

They were gung-ho on it and I think ultimately what happened was, Bombardier finally started to deliver. I think out of the outcome they were also barred from any other project in Toronto for several years from providing any LRVs.

So, you know, when I got to Ottawa, oh, Citadis, this is the same one -- this is what they're going to buy. I remember even getting on the vehicle and going, wow, this looks pretty impressive. You know you don't start off on is this vehicle going to be a crappy vehicle? How are we going to maintain it?

It was already, this is the savior for Toronto and it's already in Ottawa. So don't think

we're going to buy something that's crap.

So I just wanted to point out that I already had a bias and an understanding that this thing was that top notch, top quality vehicle. And it was a front runner for the Bombardier vehicle, that Flexity vehicle that Eglinton had bought.

Another thing I kept talking about switches, we discussed the problems. One of the other complicating things with the switches was that Thales's signalling system, unbeknownst to many of us who worked with Thales for many years, they had modified a procedure for getting around a switch that failed, you know, didn't have status.

When I worked with them many years ago you know, crossovers going from one track to another, you see the X's like this on the track. If the switch stats fails on one side, the idea is you use the crossover to get around then you use another crossover further down to get past it. Or if there's a blockage somewhere you use the crossovers to bypass.

And I remember being in a control centre and we were doing some simulations and the train stopped and they wouldn't go past us and we'd initiate a switch failure here. I go what the...

why is it not going past? Why doesn't it cross over and get around this problem?

Well, apparently there was some safety -- this was just recent from that point in time -- there was some safety risk analysis that they did where they said they didn't want to use the crossover because of some risk factor in it.

So basically, from my perspective it was like you mean to tell me I put a crossover there to get around something but you're afraid to get around it because there's some risk that, for some reason you may create another risk?

That to me was a major problem for a long time. They didn't understand why trains would stop when they had a switch failure or a status problem out there. And it wouldn't allow the train to go through the signalling system, wouldn't allow the train to bypass it.

This is the type of stuff where even new safety regimes that came in that actually contradicted what you were doing there. You wanted to do something and they said I'm not doing it because it wasn't safe, and you go, what?

This was the type of stuff they were learning. It was a surprise to me. I just

thought, you've got to be kidding, I never heard of this before. And I went and argued, like, you can't do this. You'll never get to running down the system any time there's a problem.

So that also was probably contributing to a lot of these stoppages. Not just the vehicle itself but other things like signalling protocols and switch status problems. These all make you stop and now, you know, you got problems with people at stations wondering why isn't the train coming.

For a long time they had no idea and didn't know why things were stopping. So, again, not enough time to test and find out exactly and get all these kinks out in the system. Then when you start running, all you need is a couple of bad days where all the kinks come out in one fell swoop, and then you're shot.

KATE MC GRANN: On this switch piece, do you remember when you learned in the control room as you've just described that this decision had been made?

THOMAS FODOR: During the testing commissioning phase. And I was flabbergasted because I kept -- because the operations guy came

to me and says, Tom I don't understand what's going on. And I went in and they were doing this simulation. I said, well, you've got to go around it and get it back in, and he says it's not allowing it. I go, what? That's when we started going into it and discussing it.

We never got a full answer, because, again, we're dealing with Thales a subcontractor that we weren't directly dealing with.

But there's some safety investigation, or risk analysis that someone came up with, or maybe because of new standards, but effectively blocked using a bypass strategy when you most needed it, you know. I got a switch status loss on the back tail, I can't get through but I'll go through the other crossover and it wouldn't allow it.

And I never did get to figure out what it was because I was busy on other things. But I remember him calling me and going, I don't get it. I thought this is the stupidest thing I ever heard.

I thought, why would I put a crossover there? I created two problems, two switches for a crossover. Now I've just created more problems -- don't put any crossover. Now you've got a problem

because if you do have a blockage in front of you you can't get around it.

So it was really frustrating. It wasn't just vehicles, there were other issues. Signalling, unknowns that happened, switch status that I kept hearing they had problems with switches not providing status, then trains not being able to get through.

So you know...

KATE MC GRANN: So when you say you discovered this during testing and commissioning, would this have been before trial running?

THOMAS FODOR: You know, I can't remember. It could have been just before. And I thought that they resolved it and they may have, but it was a real problem during test and commissioning.

However, there were trains that stopped out there, I kept hearing it's a switch problem again, the same damn switch at whatever station it was.

It was like, why is that switch acting up all the time? You know, it's -- I don't know.

KATE MC GRANN: You said you argued with someone about this. Who did you argue with?

THOMAS FODOR: Well, not argue. We argued amongst ourselves. But Thales says this is a risk safety thing. I said, they're full of it; you can't do that. You're stopping a train and then -- I think it allowed it, but you had to -- the guy would have to switch into the main wall then drive-through it and it had to be a certain timeframe, then he'd have to drive-through at two kilometers or something then you have to view the track?

I'm like what are you viewing? There is nothing in front of him. It wouldn't allow an automatic system that would stop the train then this guy would, I think it was a timing thing, then he'd have to put it in manual then go through the switch really slowly. I thought, oh, my God I've lost all the advantage of just going around it.

It wasn't that it wouldn't allow it, it just took a long time, like nothing I had ever heard in my life before.

KATE MC GRANN: Do you know if this issue was escalated to anybody who could actually deal with it?

THOMAS FODOR: We took it up. Glen did as well, took it up. But I think it was one of

those things like how do you argue against a safety risk mitigation thing?

We were part of the -- had I worked at Thales I would have told them to go shove it, like, that's crazy.

It's just like we found out later it was because of some -- we questioned it, like, what the hell is going on? Why is this thing not allowing the train to go through?

Then it came back later, a week later I talked to him and he said, it's some safety risk thing they did. I said, who? He said, well, Thales. That's the way the program is set up.

Once the program is set up it's very hard to change things. You have to go through some very, very iterative safety simulation process and you have to re-check all the software. Once it's there, it's like, it's hard to get it out of there or modify. Then it's like millions of dollars worth of changes to software.

KATE MC GRANN: I just want to understand at a high level. As you're reviewing RTM's work preparing for a maintenance after revenue service, are you reviewing against a schedule they've provided?

Are you reviewing it against requirements in the project agreement? What is your benchmark that you're reviewing them against?

THOMAS FODOR: Both. You have to have these things three months before, six months before. So I'm telling them next month you have to have this document.

Okay the document has to have this, this, this in there, which is in the PSOS or whatever the spec is. Over and above that, there's things that I would expect to see in there from my experience. Like, you need to expand on this.

And the PSOS is very detailed. It talks about access management plan, then the EIS system, and so it gets pretty detailed. Then you have to have a vehicle maintenance schedule and one for signalling, all those other -- not the schedule, but the maintenance plan itself.

So it's not just overall maintenance, it's a maintenance of every major element that's got to be in there. You start off small. By the time you get it it's a very detailed document, you know.

Again, it's all they're writing it, based on like when Alstom wrote its maintenance

plan it's writing it on the basis of its own reliability of that vehicle, you know.

They're not going to do it, put the maintenance plan, saying well, we assumed this thing is going to be out of commission half the time. They're saying our vehicle is this reliable and based on this, from our experience, this is how many people we have and here is the schedule with all of our maintenance, preventative maintenance.

So you can see a whole schedule of what they have on a, you know, on a weekly basis when they do overhauls.

Again, as I said. It's on the basis that it meets the reasonable requirements for reliability. If it doesn't, that maintenance plan, you can double the effort then or triple. And that's where the problems come in.

KATE MC GRANN: At any point during your work, did you have any concerns that RTM was not in compliance with the project agreement generally?

THOMAS FODOR: No.

KATE MC GRANN: Did you have any concerns they were off schedule in their preparing for revenue service from the maintenance

perspective?

THOMAS FODOR: Not from a maintenance perspective. Based on what they had, what we had planned out, they were ready. In fact, the way they had to sort of ask a lot of subcontractors, because the contracts had been started by, it was supposed to start I think September 1st or a couple of months before, then it got delayed.

And they had to go back and now tell these people, don't hire these people for the subcontract, can you extend it out for two months or something?

So they were having a difficulty because of the shift in the revenue service start, because they were already setting from here, and then all of a sudden it's like, well, we don't want to start paying you now; we're not ready. Can you extend it out to this point?

So they were backtracking a lot with their subcontractors, basically asking them for extensions and saying, you know, don't start billing us now, even though a contract had been signed.

KATE MC GRANN: When you talk about the delay, are you talking about the delay in revenue

service availability from the spring of 2019 to the end of the summer of 2019, approximately?

THOMAS FODOR: Yeah it was like three months or something. And as I said, these contracts are written up and, you know, months before, and, you know, we're telling them you better be ready. All of a sudden we're saying, can you hold off for three more months, well, we're hiring people for this project.

It was only the difficulty -- they were backtracking a lot towards the end. But it also gave them time to get the spare parts together, because that was a difficult thing to get from RTG because, you know, construction guys are not worried about spare parts. They're trying to finish something.

The last thing they want is you coming with 5,000 rows of spare parts of, I want to itemize everything, where is this, this, this? They're like, get out of here, we're so far behind.

That was a difficulty getting it. But we did get, I'd say about 95 percent of spares. From the maintenance point of view, the spare parts were there; the staffing was there. The problem was that it's like, you know, all of a sudden

you've got four commission things to do in one day, you know. You can't do it. It gets delayed.

And that was a problem with these guys. Every time they worked on it. Okay, I got it fixed, they move the vehicle, something else breaks down.

And it could have been maybe inexperience. Again, you hire maintenance people it's like anything. Until you get to know the vehicles and little nuances... I mean, there was one guy who was really good. The operator would be on board, the train would crap out, and the guy didn't know what happened.

And this guy knew the vehicle well. He'd say, okay, press this button, and flip that switch, and it would work. Like, but this guy knew the design, the circuitry and everything and what the guy, the operator is calling back, he goes, it's not working anymore; what do I do? Try this? No, that doesn't work.

Then this guy knew the vehicle really well. He'd be able to say, flip this switch, do this and do that and see if it worked. Then it worked. Oh my God, like this guy he's worth his weight in gold because he could solve problems just

because he already was familiar with the little -- the design of the system and how to get around something.

The average operator who's only learned how to drive the thing, he wouldn't have a clue if something starts red light coming on; what does that mean?

KATE MC GRANN: In terms of in-depth knowledge of the vehicles on the system, what was your view on the readiness of the maintenance team from that perspective?

THOMAS FODOR: Well, the help desk which is where they call in, he tends to be a maintenance expert, you know. There's probably more than one, but the one I saw, he knew his stuff.

He was a driver, he was a driver himself, but he was also a maintenance tech, so he had both the knowledge of what's in the cab, and how the vehicle reacts and he also had maintenance experience.

So you know, when there was issues, he could help, but he's not there all the time. And there were a lot of issues where they just didn't know because again, you know, maybe it wasn't --

maybe it was a new vehicle and they're slightly different things in the door design and nobody understood that they, if you hold it, it will crap everything out.

I was surprised when I heard that. That was one of the first things that ever happened and it went and got into the news I thought, oh, Jesus, you know, how do you, you know?

But again the door design document should have indicated that, but because normally that will tell you how this functions and if you hold it for more than three seconds it will time out and do this and that.

Now who is the operator? It's the City of Ottawa. Did they read those documents and understand? Because they're operating the vehicle. It's not a maintenance issue; it's an operating issue.

The thing times out, the train stops. The operator, should know that is because of this, and they should know how to get around that. Again the operators are -- City of Ottawa operates buses not LRVs, okay?

To get around a problem with a bus is a lot different than getting around a problem on an

LRV. Bus you can bypass, just drive around a failed bus, not a problem.

LRV, you can't get through the crossover and there are instances where I watched during a trial run where I thought get that train out of there. Why aren't they stopping everything and get him out of there? They kept bypassing it. But bypassing will double, triple your headway, like the number of trains can get through.

It would be there for an hour. And I'm like, why are they not just stopping for five minutes and get that train out of there? And lose five minutes, but don't spend an hour having a third of the trains getting through there, because of this stalled train there, you know.

All the guy had to do is go up reset a switch on the panel on the side. I thought all you have to do is stop traffic, flip the switch and they can drive-through it. No he stayed there, they kept the thing operating at very low frequency for an hour. That's an operator issue.

KATE MC GRANN: When you say that having a train sitting there doubles or triples the headway, you it mean doubles or triples the time between when one train reaches one station and the

next station. It's an extension of time between service, right?

THOMAS FODOR: Remember I talked about the crossovers. You have a train stuck at a station it's not moving. Now, if you can't move it, you can't get by him on the westbound track let's say.

So if you have a crossover, get through over to eastbound track, get by it, get back on to the westbound track further down.

The problem is, you can only get another train through once you get this guy, then the opposing train can come through on that one track because this guy is still sitting there.

So usually, like, if you look at the time to go through and you double that, that's what your headway is. If it's a five-minute trip to get around before it's clear for the next one, that's another five minutes, then this guy can come around again, that's a ten-minute gap.

Now if you're operating at three minutes you just tripled your time. It would have been smarter to say let this guy get out. All he has to do is reset a switch from the side, outside, and then he can just start driving.

But they didn't do that. They left, they kept the guy in there and kept doing this bypass operation at a third of the capacity, or the headway, because they -- I don't know. We questioned it ourselves.

But I wasn't in the OCC, I was in the other turnover. I was just watching the MMIS. Why aren't these guys, the operators, you know, doing what I would have done?

KATE MC GRANN: To your knowledge, was there ever any discussion or consideration by the City of bringing in an experienced operator to act as a resource for the OC Transpo staff who were running the system at the beginning of revenue service, a sort of shadow operator type of people; are you aware of anything like that?

THOMAS FODOR: I wasn't aware. It would have been a good idea. But I wasn't aware -- my problem is, I wasn't in the OCC, I was at the maintenance control centre where I could see what was going on, on the main line.

The OCC, the operating control centre where the City of Ottawa was, was just down the road. But I did not go there, I was just watching from the maintenance, because I was supposed to be

doing maintenance, making sure the trains were getting out.

But I could see what was going on, and I just remember commenting a couple of times, going, oh, my God, you know, what are these guys doing?

KATE MC GRANN: So I understand you're talking about the day where you see this one incident take place and the decision not being taken.

But more generally, do you know if there were any consideration given by the City to bringing in a shadow operator, operators with more experience to act as a resource for the drivers and operators once it went into revenue service?

THOMAS FODOR: I think there was -- there were a couple of people -- no, I honestly think that -- I don't think there was ever anybody -- I know what I was thinking.

There were airport operators, because they had this knack the way they talk like if you were an airport controller, like at Pearson, for example. That's what their experience was.

I don't think there was ever any operator like, you know, there's a number of them

RAPT, and KEOLIS, whatever it is and another company, these are pure operators that were doing, they never brought them in.

Ottawa is going to run it. Again, that's my understanding. I don't recall. But again, I don't deal with the OCC that much. It's just from watching, I thought, you're not doing what I would be doing, and I've operated systems. So I just thought this doesn't make sense.

KATE MC GRANN: Did you mention that to anybody at the City at any time?

THOMAS FODOR: No, because it was trial run. I was working days and nights to watch the trains going in and out. But I commented to a couple of other people around there. It wasn't my place to say Ottawa, you guys have got it wrong there.

It was -- I didn't understand at the time why they did. It was later on that I found out this guy could have gotten out. I kept thinking, that train, why isn't it moving? And why are they not getting it out of there?

Then someone who had come in, I can't remember who it was, so many people walking in and out. He said all the guy has to do is get out in

between the two tracks and flip the switch and he can go. Reset something.

And I thought, oh, you know, but that's typical if you're not -- again, I don't know what the operating plan was. I always thought the concept of operations and, again, I think on the complexity of Bombardier there is no outside reset switch that you can switch reset something.

But the Alstom one I never dealt with. I guess there's some switch they could have reset from underneath on the side or something and then it would work. You have to know the vehicle design to know that.

KATE MC GRANN: What was your role during trial running?

THOMAS FODOR: Pardon?

KATE MC GRANN: What was your role during trial running?

THOMAS FODOR: Monitor the train input and output and the maintenance activities. Of course, I monitored how the thing's operating as well, which is why I spent 20 hours.

KATE MC GRANN: And how did you -- were you scoring the train input/output? Were you recording what you saw? What kind of output were

you generating from your review.

THOMAS FODOR: That was already being scored. There were guys from the City of Ottawa who were scoring how many trains are going in. How late they were? Things like that.

I was just there to observe and then at night actually monitor the workout there, I could hear them on the radio, I'd also go out and check to see what they were doing. Go over the vehicle maintenance building as well, but, you know, again, they were under pressure and it's not like they really liked a lot of people walking around.

I can go through with another guy and just you know see how they're doing and they were busy but, you know, are they okay? Yeah, yeah. It will be ready. Then three hours later it wasn't ready.

KATE MC GRANN: What was the purpose of your observation during the daytime and checking on maintenance at nighttime? What function did that serve for the City?

THOMAS FODOR: To confirm what type of maintenance was being done. Because it was a maintenance plan. So the maintenance plan said, this week we have to inspect this switch. And

every night there was a plan of, you know, the vehicles they were pretty detailed. They had these vehicles, this and this. It was a very detailed thing.

We knew, we went over and they had all the schedules out. But on the main line there was things like switch inspection, signal inspection, track inspection. They had to walk the track to make sure, because our maintenance plan said every week you have to have a visual inspection of the tracks.

So they would go out -- I'd go out, yeah they were checking the track making sure there were no cracks. We were literally doing what you would normally do on a regular weekly and daily basis whatever maintenance had to be done. Then have others there was corrective maintenance.

If OCS line broke then you had to fix that or something that had failed out there, you'd have to fix it. That's not preventative; that's corrective maintenance. They actually have to go through the whole maintenance tests that were assigned. This week this is what we're going to do every night. I would be there to make sure they did that.

KATE MC GRANN: Would it be fair to say you were auditing RTM's compliance with its own maintenance?

THOMAS FODOR: Yeah.

KATE MC GRANN: What was your assessment whether they were able to comply with the maintenance plan during the trial period?

THOMAS FODOR: They may have -- there was one they couldn't get out there in time or another group; I can't remember. But basically they followed it to the T.

It was, you need to do this; you know and you need to open and close the station doors at a certain time and I'd be at the control centre and they'd press the buttons you can see the doors opening up at the stations right on time, otherwise they're penalized.

KATE MC GRANN: With respect to the corrective maintenance that you saw, were you also auditing their ability to achieve the corrective maintenance required by the system?

THOMAS FODOR: Well, it's not required. I mean, you put a work order in if there is a corrective maintenance issue then a work order would be generated, which I could see.

And then they would assign it and then either try to get it out. If it was critical then it would be immediate, like tonight. If it was something that could be done during the day, like if it was not right on the main line, then the guy would go out to do the whatever work.

And then some of it would be held off to the weekend when it was less traffic and less revenue service hours, and they would say, well, plan that out.

But that was all, that's just pretty standard type of thing, you know. You know what's critical and what isn't. Changing a light bulb you can wait until the weekend.

KATE MC GRANN: Would it be fair to say you were reviewing and assessing RTM's response to work orders received; is that what you were doing?

THOMAS FODOR: Yeah, and generated by the maintenance plan.

KATE MC GRANN: And how, what were you reviewing that against? What was the standard or the benchmark that you were reviewing their work orders as against?

THOMAS FODOR: The schedule would, the preventative maintenance schedule was there. If it

said you had to inspect this week, then they would have a schedule. I mean, it didn't have to be on Tuesday, if they couldn't do it Tuesday it was on Wednesday. But if the schedule said, you must do this inspection this week, usually it's down to a week type of thing or once a month, then they would do it. But let's say if it was a weekly thing for three weeks, if I was there, they would do it three times.

And again, the problem is a lot of times what they do is they'll say, you can't inspect the whole alignment.

So they'll say, we're inspecting segment one tonight. Tomorrow we're going to inspect segment two, next week we inspect segment three. Over a month they'd inspect the whole thing.

We just noted that, okay they were going to do this one this night, that one the next night and they would check that. And they got the OCS lines that they've got to check as well.

KATE MC GRANN: With respect to the corrective maintenance or reacting the work orders that are generated during trial running, you were also evaluating that, correct?

THOMAS FODOR: Only in the sense that it if a work order has been done, and if it's going to affect service, then they would work on it as soon as possible.

If it's -- there's a lot of work orders generated that are, you know, it's like, you know, in your car a little light comes on, it's a yellow light, I've got to do it, but it's not immediate.

Again, that's the type of thing where you fit it in the best you can. If there's one night where you're doing a lot of preventative maintenance, then, you know, you're going to do it.

The problem was, with vehicles, it wasn't just preventative maintenance issues that they had to contend with, it was a lot of these corrective maintenance things. The doors didn't work again; or it stopped in the middle of nowhere. That's a signalling issue, you know, the controls.

So you take it back, and that's where I think the overkill was in that respect with the corrective maintenance issues. Because you never -- you've got your preventative maintenance plan, and you've got your preventative maintenance tasks, but your corrective maintenance should never be twice as much as your preventative maintenance.

KATE MC GRANN: Is that what you were seeing during trial running, that the corrective maintenance wasn't as much?

THOMAS FODOR: I'm just giving you a number.

Oh, yeah, well that's why they couldn't keep up. Because all of a sudden, there were all these problems that just popped up, and that's on top of what they need to do. And then recurring problems. They'd fix it and it would, again, the same problem. And you go, is it a design problem? Or, is it a maintenance problem? Like, did the guy fix it properly? Is that why it broke? Or is it the component that's faulty? Or is it --

KATE MC GRANN: And were you reporting that back to the City that you were seeing that the corrective maintenance needs were overwhelming the maintenance staff during trial --

THOMAS FODOR: No, that just came out as we were going along and we realized -- you know, the test and commissioning part where they were running the vehicles, you know that you're going to have problems on test and commission.

I've been on projects where, you know, first two months, the trains don't want to go, you

know. But you slowly get these problems, you know, removed. And ultimately, it's that bathtub curve. Initially it's one problem after another.

And certain vehicles seem to be like lemons, you know, really hard to get at them. And that's expected.

What isn't expected is that there's so many issues and so many recurring issues that you can't get enough trains out.

KATE MC GRANN: Right. So --

THOMAS FODOR: When you do they break down all the time.

KATE MC GRANN: I want to, and I don't yet, understand your role in assessing maintenance performance during trial running with respect to corrective maintenance.

I think what you're telling me is that what you were seeing was that the corrective maintenance needs were overwhelming the maintenance staff during trial running; is that right?

THOMAS FODOR: Yes.

KATE MC GRANN: And who did you report that to? That's what you're there to assess, who did you report your findings to?

THOMAS FODOR: It was during the trial

run. At that point it was already a given that there are problems and they were scrambling to try to fix it. I didn't have to tell anybody, it was obvious. The maintenance staff can't keep up. Why? They got problems coming out their ying-yang. They don't even know how to get at them.

There's problems on the main line, switches are not allowing -- you know, trains can't get through switches.

There were operational problems, like you're leaving a train out there and you're holding back traffic.

So it wasn't just because there was corrective -- and why are there so many corrective maintenance problems? Because it was either a poor design -- I don't believe it was poor maintenance. Again, or -- I don't know. I never got around to saying, what exactly is causing this?

This vehicle was supposed to be the premier vehicle of Alstom, and it seemed to be working everywhere else except in Ottawa. Why?

Well, the only conjecture I have is that it was put together very quickly, assembled by maybe inexperienced people. Very little test and commissioning.

A lot of times when they -- the trains went out, but that's expected in a lot of places I've seen it, but the timeframe was not there. You can't have a two-week trial run in which you never passed any day, even though they claimed they passed.

You can't have a test and commissioning that went from six months to like two and a half months. And even there, they had to cut back because there's only so much time. So you go, well, I've got 150 things to check, I'll do 25 of them, the basic ones.

So who tested the doors? They never did, until the people did. But that would be a typical one to test, but if you don't have time, you can't do everything.

KATE MC GRANN: How did you record your assessment work during trial running?

THOMAS FODOR: I reported on, I think it was a sheet, basically, what was going on. But I wasn't going through all the corrective work order numbers. If I needed that, or if I wanted that, I would just go to Alstom and say, you know -- you see, that's the other thing.

They would have to put that into the

monthly report or weekly report that they put together, "here are all the problems." That's what the maintenance plan and the whole maintenance inventory, maintenance management information system is.

It provides a report and says, "these are all the problems that we've had". I don't need to go and hunt them, that's just generated: These are all the work orders that were generated yesterday. These are all the work orders that were generated over the month.

KATE MC GRANN: What was the purpose of having you there to observe the trial running? What were you there to achieve?

THOMAS FODOR: Just to make sure that they did the maintenance that they needed to do.

KATE MC GRANN: And is that what you in fact observed? That they did the maintenance that they needed to do?

THOMAS FODOR: To the best of their ability. The preventative maintenance, they did. The corrective maintenance, I would assume that they would -- because they couldn't get half the trains out, even if they claimed that they fixed it, it didn't last long because they wouldn't get

out. They'd start out and crap out again and they'd pull them back in.

Sort of, you know, I mean, yeah, I could've asked for all the corrective maintenance things, but that was about the time I was also pulled out of there because it was already running and the whole point was, well, we do have a maintenance staff that's operating. But it was apparent that there were other issues, operational, design issues, or whatever you want to call it.

The fact that maintenance couldn't keep up with it, all that proved was, the product wasn't a good product.

KATE MC GRANN: And what I'm trying to understand is, it sounds like you knew all the way through trial running, that maintenance staff could not keep up with what was happening on the system; is that fair?

THOMAS FODOR: In a way, yeah. Yeah. But I mean it's too late. They're opening up in two weeks, and they knew they were already -- as I said, I knew that their people had left. So they were scrambling to get people to come onboard.

KATE MC GRANN: Did you report back to the City what you saw about the maintenance staff

not being able to keep up with the demands during trial running?

THOMAS FODOR: Well, I told my boss who was -- I actually can't remember his name right now. But he knew, because I talked to him every night. "How is it going, Tom?"

Operate -- you know, maintenance, they did this. They're operationally doing that, but you got a problem, they can't get enough trains out.

And when they were out, you know, he would get reports, like what happened today? Well, we got 66 percent availability out there. That's not good, you know.

And it came out to a number of issues, and one of them was vehicle problems, operational issues, you know, things like that, switch status problems kept popping up all the time.

KATE MC GRANN: I understand that you don't remember your boss's name. Where was he employed? Are you referring to your boss at Parsons, or are you referring to somebody at --

U/T THOMAS FODOR: No, no. City of Ottawa. I can get his number or name, I just can't remember it now.

KATE MC GRANN: Okay. I want to step back from trial running for a second --

THOMAS FODOR: Sure.

KATE MC GRANN: -- and understand, did you have any involvement in assessing the efficiency or the process for RTM and its subcontractors receiving and responding to work orders?

THOMAS FODOR: Sorry, say that again.

KATE MC GRANN: Yes, let me try to make that a little bit more clear.

I'd like to understand if you had any involvement in assessing the system by which RTM receives and responds to work orders on the system? I think it's --

THOMAS FODOR: It's all part of the MMIS system. The work orders are all generated. They all respond in a certain timeframe. There's open work orders, closed work orders. It was all reported on a daily basis.

You know, it's one thing to report them. It's another to keep up. If you can't do it, because you don't have enough people, or the work orders just keep piling up, the result is, you can see it, it's evident. They can't get the

trains running.

I didn't have to go there, because I knew that these things would all be in the monthly reports. Actually, at that time, there was a weekly report, I think they still had weekly reports. But the monthly would give you an overall monthly assessment. But there were daily reports, weekly reports, and these are all listed there. So they knew exactly -- I didn't go into detail. To me, most of it was vehicle-related problems. And to me, it was other than -- it wasn't the fact that the maintenance guys didn't know how to maintain it, maybe there's a little to that. And I wasn't going to start playing who's to blame. All I knew was, there's too many work orders coming in, and it's too fast and furious and nobody can keep up with it.

That was a combination of, as I said, it could be poor training. I doubt that, because most of the guys were Protrans who came over, and were already working on the Citadis vehicle, even though some of them left.

There could be a design issue. There could be component issue where they, you know, you buy a component maybe cheaper from some other place

and that's giving you problems of FMECA and everything else, and I'm not into that. That's where you're looking at failure modes, and is it this component, or that? And, what's the reliability? And, you know, what's the impact if this fails on the whole fence, I don't get into that.

It was really more, do we have the people and the resources to keep this system going? Assuming that it's been designed and built properly. If it isn't, I can't -- obviously, if I had known before I would have said, "you better triple your staff".

KATE MC GRANN: Stepping back from all of that for a second.

It's my understanding that work orders and the MMIS system are one of the instances in which OC Transpo as operator and RTM as maintainer interface with each other; is that right?

THOMAS FODOR: Yeah, yeah.

KATE MC GRANN: Do you know whether before going to revenue service at any time, whether there was any testing done to see if that interface worked as it expected?

So I'll give you some examples of what

I mean. OC Transpo staff are entering work orders correctly and in the anticipated sort of pace, and order, and time of day that you would expect. And that RTM staff are receiving them properly and responding in the way that you would expect?

THOMAS FODOR: I don't think OC Transpo staff did any work orders in that respect. If it was to call them saying that there's a problem, the work order -- they could call in a work order, yeah, yeah. Then that would be maintenance problems.

Most of the work orders were within Alstom and RTM, because they're the maintainers. But certainly -- and usually, anything onboard a vehicle, would be generated by the vehicle itself, or the driver, or the maintenance staff knowing what the problem was.

But, yeah, definitely if OC staff pointed out and say, this train number five failed at a station, we don't know why. Obviously, well, even I could see that then, and there was communication, then there would be a work order generated.

First of all, get the damn train out of there. Secondly, what's the problem?

Usually by the time they got back you usually had an idea, because you get statuses from SCADA as to what you -- SCADA, "Supervisory Control and Data Administration".

So it's a big board, and has a lot of flashing lights, and it tells you, this vehicle is a red failure which is a critical one. And you can, you know, dumb down into it and see what it is.

Or, the message will come directly like a radio message saying, or on from the screen saying, this fault category on this train. So they even before it's gotten back.

The problem is that there were a lot of things that they didn't know what the problem was, which makes it harder. Because now you've got to figure out, you think it's this problem, but it's something else. And if you don't know, now it takes longer to figure out why the thing failed and why did this not work?

KATE MC GRANN: So what I would like to know is: First of all, did you have any involvement in any sort of practice runs whereby OC Transpo's staff get to act as if this is real life, call in work orders and see, are they calling them

in properly? Is this happening as expected? How is RTM responding? Was any kind of dry run done like that that you were involved in?

THOMAS FODOR: That was the trial run.

KATE MC GRANN: Other than trial running.

THOMAS FODOR: Well, the test and commissioning, I wasn't involved in test and commissioning. That would probably involve the control centre as well. Because they would control a certain segment and say, yeah, you can come out.

But once they're out there, usually it's just the guys running trains back and forth. And it doesn't necessarily have to deal with the OCC.

But I'm sure that they would be watching, or if there was a problem, they'd call up OCC and say, we had a problem here. There is some talk. But that wouldn't stop work orders from being generated. I mean, both of them -- that's all fed into the computer.

So if they're calling in, that is generated, they type the failure in, or they call and the help desk will put that failure in, and there's a work order generated. It's not like they

called in and, you know, RTM didn't or Alstom didn't do anything. I mean, if the train failed, first of all, they had to get it out of there and then get it back and try to fix it as soon as possible.

Again, as I said, I think that the problems were they thought they fixed it, and it wasn't. And again, that comes down to knowing the vehicle, whether these guys had as much experience as I was led to believe, I don't know.

Secondly, it could be, again, recurring problems. That, to me, could be either it wasn't fixed properly, or that component is a piece of you know what. And if they're all built like that, you're going to have that same occurring problem all the time.

But I never got into analysis as to how many of these failures occurred, that wasn't my role at the time. That's a FMECA thing, and they have engineers who do that and see, is this a problematic component for the whole fleet? Or, is it just this one lemon, you know.

KATE MC GRANN: Did you have any involvement in the City's assessment of whether revenue service availability had been achieved?

THOMAS FODOR: No. I was there, I heard what the end result was for the day, every day that I was there. That was determined by City of Ottawa representative who was taking notes there. We watched, I made notes for our own people. But, no, I did not assess whether it was a pass or a fail.

I heard later, towards the end, that things were being passed because of the pressure to open this up. Whereas, you know, as I said, if you only take the 10 hours everything worked well out of the 18, sure it's a pass. But what about the other 8 hours, you know, so...

KATE MC GRANN: Who told you about the pressure to get the system opened, and if that effect on the --

THOMAS FODOR: Nobody had to tell me, everybody knew, there was pressure. It was all -- everybody knew. This has to open, it's already been delayed.

There was no more delay times, it was "let's get this done".

KATE MC GRANN: And did you or anybody at Parsons have any involvement in the City's consideration of when to open to revenue service to

the public?

THOMAS FODOR: No.

KATE MC GRANN: Was any feedback sought from you about when that should happen or anything like that?

THOMAS FODOR: Indirectly, yes, I said, "which year?"

KATE MC GRANN: Who asked you to elicit that answer? Who did you have that conversation with?

THOMAS FODOR: That was just a joke between me and the City of Ottawa boss that I had. He talked about opening -- actually, it was earlier. I think it was in the early summer that they first were going to open. And he said something, and I said, "next year, right?" He said, "no, this year."

He says, "well, maybe they'll extend to October." I said, "I'd hold out for another six months."

Because I remember telling him, it's not going to open well. You don't have enough time to do a proper test and commissioning and trial run.

And even when I saw the trial run

process, and how it gets evaluated, I thought, this is going to be a piece of cake. And even that they couldn't do, you know.

And I have seen trial runs where you run for three months, if not longer. This was three weeks at the most, and it was not really passed.

KATE MC GRANN: Where have you seen the trial runs for three months or longer? Was that because it was originally determined that the trial run period should be that long? Or, was it because the trial running period had to restart over and over again because of what was being seen?

THOMAS FODOR: Well, there are some systems where I know they've had three months, if not more. And in fact, one -- what was it I was reading? They ran for six months before they opened up. But that's pretty -- that's a long time, you know.

But my feeling was, if it was less than two months, it ain't going to work. Not if it was the type where you had to pass X-number of days, and if you didn't like pass it -- if you didn't, you started it from scratch again.

So we always allowed for like two to

three months. Two to three weeks, I just said, this is -- "it's not going to open up well." And I made that verbally clear. I did not send it to, you know, City Hall or anything like that. But I remember telling my boss, "there's no way you're going to do it. I've never seen it done."

It was just one of those things where, just gut feel. Knowing that -- even if it was -- even if a vehicle was good, was reliable, it just takes a long time to make sure all the elements work in unison.

And when you get an unreliable element, especially a vehicle, the vehicle in which is a critical piece of it, then it becomes almost impossible.

KATE MC GRANN: Did you deliver any kind of final report on the readiness of the maintenance team to the City after trial running?

THOMAS FODOR: No. Because after that, our contract was up, and I never went back.

KATE MC GRANN: You never went back to the City after trial running?

THOMAS FODOR: No.

KATE MC GRANN: And you didn't do any further work on the system after trial running?

THOMAS FODOR: No, I was back on Eglinton. Basically, we were waiting for a renewal of the contract, and then of course there was all these problems there and everything, so that sort of dragged on.

Then they wanted me to join -- to get on to the second part of the extensions, and that was about the time I left and I went to HDR and went on to the Ontario line from the Eglinton line.

So, yeah, the last thing I remember was driving out of Ottawa and hearing about the doors being stuck or something. And I thought, oh my God, I thought, I got to go back, and I never did. I never did go back and talk to them about it.

That's why I can't really tell you how the follow up was. Because I had been there for like two weeks and literally sleeping four, five hours, having weird hours. Like sleeping in the afternoon and working the midnight shift. By the time I left, I was just like, I want to go home.

And then after that, I never went back. So I never knew -- I never really got into any discussions with anyone about some of the questions you're having as to what exactly went wrong? It's

just what I saw and what I suspected.

KATE MC GRANN: The Commission has been asked to investigate the commercial and technical circumstances that led to the breakdowns and derailments on the system.

Based on the work that you did, are there any topics or areas that you think the Commission should be looking at that we haven't discussed today?

THOMAS FODOR: Well, I think the whole OCC, I don't know whether they were the proper people to have run it. I'm sure a lot of them had qualifications as, you know, for buses and airports. But I think what you mentioned earlier, if they had some ghost operator there -- and they may have. Honestly, as I said, I don't know.

It's just that some of the things I saw what they did, it just -- I thought, they're not doing what I would have done. And just again, my gut feel, I never did deal with them. I was more or less in the maintenance area. And because there's a maintenance control centre there, we could watch the OCC, all the trains out there. We could hear them communicating with them -- and we could communicate with them. But we could hear

what was going on, and our role was really watching the faults coming in, the statuses of different things and, you know, stuff like that. And so dealing with failures, you know, issues like that.

So I mean, I may be out of my -- the realm of what I should say about the OCC. But I just thought -- and I know a couple of other people that I've worked with said the same thing, they're bus operators and it shows. Just one of those lines where -- take it for what it's worth.

KATE MC GRANN: "OCC" stands for.

THOMAS FODOR: "Operations Control Centre".

KATE MC GRANN: Okay. And that's staffed by OC Transpo staff?

THOMAS FODOR: Yes, City of Ottawa was the operator. Yeah.

KATE MC GRANN: And the Commissioner has also been asked to make recommendations to prevent issues like this from happening again.

Are there any specific recommendations or areas of recommendations you think you should be considering as part of that work?

THOMAS FODOR: Well, my -- I think SNC-Lavalin was the one that was the main

contractor for RTG, right?

KATE MC GRANN: SNC-Lavalin was a main -- sorry. Explain to me what you mean by that.

THOMAS FODOR: It was one of the main elements within the RTG group. Well, I don't want to belittle them, but I know I dealt with SNC-Lavalin as a parts competitor for Bombardier for many years. And this is just what I experienced, okay? And I'm just suggesting that this may have happened.

For many years, for a number of years, we lost a lot of contracts, bids to SNC-Lavalin. I remember a number of my directors saying, we've got to cut this out, and cut systems engineering out, blah, blah. We can't win projects and everything because SNC-Lavalin keeps winning them.

And I thought, the only way they can be winning this is because they're cutting out system engineering, definitely. And their bribing or something like -- and that happened, we found out later, SNC-Lavalin won a lot of things. I'm not saying they won Ottawa from bribes.

But I do believe there was no system engineering. SNC-Lavalin's format was, we'll take this project on, and then we'll throw out all these

things to these guys and tell them, "it's your responsibility to interface".

And, sure, you've taken out a huge element. Where in Bombardier, what I did, and others was, we had a system engineering group that made sure that all these elements were designed properly in, instead of just throwing them out to these people and then say, "make it work". And I honestly believe that's one of the biggest problems and -- because of the way SNC-Lavalin worked.

In fact, I do know that the yard was not signalized the way it was supposed to have been. It should have been ATO. In other words, the trains automatically come to a point and a guy gets on board. That didn't get done when I was there. It was going to be done in the future, but that was one of the original plans.

And you know why? Because SNC-Lavalin took Thales' bid, and then extracted the system engineering element out of it. Because Thales does the same type of thing, where they want to make sure everything works. And the management part, the internal management, and then they gave them the bid, the contract, and it was only later that Thales found out that their engineering, or system

engineering and engineering design element was taken out.

And so they were actually doing this job for a lot less, because SNC-Lavalin won it because the price difference. So there was a big argument, and from what I understand, SNC-Lavalin refused to do any signalling in the yard until they got paid. And it was probably going to be some, "later on we'll pay you to do it". But there was never any ATO yard, and that was part of the design.

I remember asking, "why isn't this thing signaled?" So it's done so that the guy gets on here and he's not walking through the whole thing.

"Well, that's because there was a feude between Lavalin or RTG, because they took out some of the costs that were internal to Thales, and then they just said, 'do the design'." And then they did it.

But you know, you don't take out a certain portion of it and keep the profits for yourself, or cut it down so you win the project.

But again, I do know SNC-Lavalin was famous for not doing system engineering. Probably

from what I've been saying, you understand how I look at system engineering, everything ties in, and you look at one thing.

SNC-Lavalin did not do that. And I do know that that was probably why half the documents that we expected to find, they weren't there. Because they were more systems-oriented documents, overall, you know, how does this thing work?

They were famous for, I'll give you this, I'll give you that, and you guys are all responsible to put it together. It doesn't work like that. And that is a classic case.

And I think Ottawa suffered from the lack of system engineering.

KATE MC GRANN: And the evidence of that, the direct evidence of that that you cite is, information or documents that you would've expected to find there when you got there, that weren't there; is that right?

THOMAS FODOR: Yeah, yeah.

KATE MC GRANN: Can you give me some examples of what you expected to find and didn't find when you got there?

THOMAS FODOR: I'm only talking about from my maintenance and operations.

But I mean looking -- you need a system engineering plan, I don't know if they got one, but you can check and see.

There's a quality assurance plan. There's a whole ton of plans that you need upfront. Implementation plan, you name it.

They probably had their construction plan, but when it comes to any type of interface design and -- like in Eglinton, God, I must have read 200 different interface packages between, you know, tunnel ventilation system and the signalling system. The signalling system and the communication system, how do they interface?

I don't recall reading too many of those in Ottawa. And I don't recall ever seeing too many of those interface management documents. To me, that smacks of not having a system engineering aspect there.

KATE MC GRANN: And those documents that you're talking about that you didn't see many of and you didn't read. If they had existed, would you have known about them based on the work you were doing?

THOMAS FODOR: If I was there on a daily basis, I probably would have gotten into more

deeper, you know, like what exactly do we have here and what don't we have?

Again, my problem was, I was going once, twice a month. And when I got there, I had things I had to get done, you know, on my role.

So it was hearsay, or a couple of days extra where I got into a meeting and I found out that they didn't have this, or they didn't have that, that's where I realized, there's something missing here.

And, you know, a big problem, and I think -- and again, I don't know how the whole contract was set up with the constructors, it was a pretty unique way of doing it. To me, just looking at the ballast I thought, man, they cheaped out. Why did we not specify -- why didn't someone specify, concrete pad all the way down. Why ballast? That is so maintenance heavy to deal with ballast, that's nuts.

KATE MC GRANN: The work that you were doing, you were there, I think a couple of days a month; is that right?

THOMAS FODOR: Yeah, yeah.

KATE MC GRANN: Was there someone -- did you have a counterpart at the City who was

there every day doing the same kind of work as you?

THOMAS FODOR: No.

KATE MC GRANN: Would you normally expect someone in your role to be on the project full-time for at least some of the project?

THOMAS FODOR: Well, I'm doing that on Eglinton, I'm the operations and maintenance specialist. So you would expect someone to be there, but I don't recall anybody who was doing that role.

We had an operations specialist; we had a maintenance specialist; and we had a systems specialist that were hired by the City of Ottawa. Maybe someone suggested that they do this, because of the way it was structured and everything. I don't think Ottawa had that -- those resources.

KATE MC GRANN: And are those resources, resources that you would expect to see on the project?

THOMAS FODOR: Yeah. I would, again, if I was setting up a system, I would have a system engineering specialist, or a system engineering team, which --you know, there were a lot of different people that I dealt with and I met, who were specialists. One guy was on fare collection,

and the other guy knew the traction power.

What I didn't see was a system engineering group. I may be wrong, but I don't recall. And if it was, maybe just one person. You need a team. Again this goes back --

KATE MC GRANN: This is at the City you need a team?

THOMAS FODOR: -- this goes back to, I don't know if there was that much emphasis on it, you know...

KATE MC GRANN: When you say you would expect to see a systems engineering group, you would expect to see that at the City working on behalf of the owner?

THOMAS FODOR: At least one person watching the system engineering team on the other side, which they didn't have one, because they don't believe in that.

But, you know, you still have a system engineer who would try to -- or a group that would be able to see how this interface is. But the problem is that that's the client, he's not writing the interface documents. It's supposed to be the proponent, you know, the people who got the job, and that was RTG. They're the ones who are

supposed to be writing interface documents.

If they're not writing it, then everyone is on their own little thing and we'll put it together, and oh, my God, it doesn't work right.

KATE MC GRANN: From the client's perspective, who's monitoring that work being done by the contractor? Who at the City was monitoring that work, or lack thereof being done by RTG?

THOMAS FODOR: I don't know. I mean, they would -- they'd have schedulers, and they'd have program managers worrying about what these people were doing and all that. And there were signalling guys who dealt with Thales, you know.

But it's an approach that, you know, that not everyone follows, and I've heard a lot of, in the past, people saying, we've got to get rid of system engineering. It is a costly element, because you've got another group that is trying to put all this together. I'm not a door expert. But I've dealt with people dealing with doors. I'm not a vehicle expert, I deal with vehicle people all the time. I deal with power, signalling, you name it. And I start to put it all together and make it work.

And I think that is where sometimes

you'll find with that gap, you know, that this guy is working, but he doesn't exactly know how it's going to fit together. But the guy who's handing it out says, "it's your problem". Now you're relying on these two people to shake hands, and it usually doesn't work too well. Too many grey areas then.

KATE MC GRANN: Well, I think that those are my questions for today. And so we can bring the interview to an end. Unless there's anything else you wanted to add before we draw this to a close.

THOMAS FODOR: No, I think I'm fine. I hope I answered enough to your satisfaction and everybody else's.

KATE MC GRANN: Thank you for your time today.

-- Concluded at 5:05 p.m.

REPORTER'S CERTIFICATE

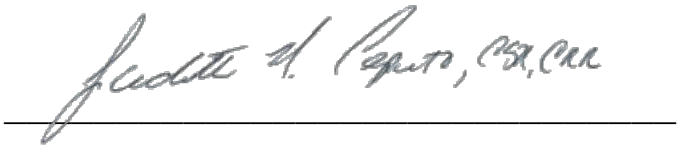
I, JUDITH M. CAPUTO, RPR, CSR, CRR, Certified Shorthand Reporter, certify;

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

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

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

Dated this 21st day of April, 2022.



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