Ottawa Light Rail Commission

Richard Holder
on Thursday, May 19, 2022

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

neesonsreporting.com | 416.413.7755

OTTAWA LIGHT RAIL COMMISSION

CITY OF OTTAWA - RICHARD HOLDER

MAY 19, 2022

--- Held via Zoom Videoconferencing, with all participants attending remotely, on the 19th day of May, 2022, 9:00 a.m. to 12:04 p.m.

COMMISSION COUNSEL:

Kate McGrann, Co-Lead Counsel Member
Mark Coombes, Litigation Counsel Member

PARTICIPANTS:

Richard Holder, City of Ottawa
Jesse Garner & Peter Wardle, Singleton Urquhart Reynolds Vogel LLP

ALSO PRESENT:

Joanne Lawrence, Stenographer/Transcriptionist
Benjamin Bilgen, Virtual Technician

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

KATE MCGRANN: When we left off, Mr. Holder, we had been discussing the trial running of the system, and in your evidence on the last day, you had mentioned that in the early days of trial running, there was an aggressive approach to identifying some of the system elements that weren't functioning. Do you recall mentioning that?

RICHARD HOLDER: I recall the conversation. I would like to -- I understand what it was that I was trying to convey. The language that you've just used is a little different to the way I was trying to convey that situation, if I might be allowed to explain.

KATE MCGRANN: Of course. I was going to say when we had left off on that conversation, you had said that you needed to explain a little bit more about trial running and how information got into the TOCC, so I wondered if we can pick up that topic and start there.

RICHARD HOLDER: The -- at that time, at the start of trial running, the City had developed a team which was called the FOB team, the field observation team -- so, sorry, FOT, and the

field observation team was made up of dozens of engineers, project managers, and support staff, both from the rail office and from OC Transpo, and their role was to behave like a surrogate commuter system.

So that team travelled on the trains during trial running, boarded the trains, alighted the trains, used the elevators and escalators. At times they would press emergency telephone buttons, they would use the call functions withins the elevators, and as much as possible interact with the TOCC as if the system was operating under passenger loading on a normal commuter day. So that explains the role of the field observation team.

We had several practice runs before trial running. We had a well-developed system such that we -- as I recall, we had two shifts of the field observation team, one that started first thing in the morning and worked until around noon and then another shift that came in around noon and worked until around 8 or 9:00 in the evening to cover the full period of the trial running.

In the early days, the field observation team that -- were quite aggressive

about the number of times that they activated emergency telephones and the call function within the elevators. I believe I had used the word "aggressively" previously, and I think your initial question -- or your recollection of my statement previously was that they were aggressively reporting failures or degraded modes or faults of the system. If that's how I characterized things in the past, I think that was a mistake. So when I say that the team was aggressive, what I mean is that they were -- they used the emergency telephones and the call help functions several times a day at several stations.

These calls were made to the TOCC and were either responded to by the special constables unit or by the controller within the TOCC. The feedback that we received from the TOCC was that they were feeling somewhat overwhelmed by the number of calls that were coming in from each of the stations, a number of calls that are coming in during the day that were not necessarily identifying any faults or identifying any degraded modes. The calls that were coming in were calls from our field observation team just to check that the telephone itself was functional and that the

CCTV-integrated system was functioning properly.

After receiving the feedback from the TOCC, we asked the field -- we asked the field observation team if they could reduce the amount of calls that they were making from the emergency telephones and from the call function within the elevators. This -- the decision to do that was made also on the basis of a quick analysis of the system that was in operation within the bus service. The OC Transpo bus service has larger transfer stations as well as smaller stations that also offer emergency telephones, and when we checked the number of times that those emergency telephones were actually functioning in real life by the passengers using the system, it was only one or two times per week. We felt that the field observation team activating these call buttons multiple times each day was not a fair representation of how the system was going to function in real life, and so we asked the field observation team to scale back their use of those -- of those particular devices. And the request was very specific to the emergency telephone at the platforms and the call function within the elevators.

There was also discussion with the field observation team about the use of the call function within each of the trains, and it was decided early on in the trial running, as I recall, that we would not be activating those call functions within the train because it was considered that that would significantly impact the overall objectives of the trial running, as an operator would be distracted by the call function, correctly; they would have to respond to that call; and this would inevitably impact the operations of the system adversely.

KATE MCGRANN: The TOCC is operated by OC Transpo; is that right?

RICHARD HOLDER: That's correct.

KATE MCGRANN: And were you getting feedback in terms of the early days where the numerous calls or the multiple calls are being made from different stations in the same day and things like that? You got feedback from TOCC. Were you also receiving feedback from RTM through RTG?

RICHARD HOLDER: Yes.

KATE MCGRANN: Okay. And can you speak a little bit about that.

RICHARD HOLDER: So the feedback was

received in a number of ways. There was a daily meeting with the field observation team supervisor that was running the logistics of the field observation work. During those early meetings, we understood that the teams in the field were receiving feedback from the TOCC as part of their call-ins.

We also had, during that period, meetings with OC and RTM and RTG around other issues, not necessarily the trial running but other issues, and so during those meetings, you know, informally we were hearing this feedback that the field observation teams were creating additional workload for the TOCC.

We also had the trial running review meetings every day during trial running. Frequently there would be discussions before the official meeting and after the official meeting. We had RTM, OC, OLRTC, and rail delivery representatives at that meeting, and we would also hear feedback around this same issue, that both TOCC and subsequently RTM support and response staff were feeling overwhelmed by the number of calls coming in, particularly associated with the call function and the emergency telephone.

KATE MCGRANN: And do you recall approximately when the calling activity was scaled back?

RICHARD HOLDER: It would have been in the first few days. I can't remember exactly the date.

KATE MCGRANN: And other than the scaling back of the calling functions that you've described, were any other changes made to the work of the field observation team at any point during trial running?

RICHARD HOLDER: Not that I can remember in a significant way. There were logistical arrangements that were changed, but in terms of the reporting of their work, I believe that the record -- there was no change to the record sheets, and there was no change to the summary information that was brought forward.

KATE MCGRANN: Other than simulating passenger behaviour, what the system would -- the pressures on the system in regular revenue service, were the field observation teams keeping notes of what they were experiencing? Was anything done to collect their observations from the day and learn anything from that?

RICHARD HOLDER: So they were keeping records, and when there were observations around defective items, defective devices, deficiencies within the system, then they were recorded, and they were brought forward, and that was used as a means of validating information that was brought forward during the trial running meetings. Part of the trial running scorecards included an assessment of the maintenance preparedness by RTM, and that included a detailed review of a randomly selected number of work orders. So we were able to use the information from the field observation team as a little bit of a crosscheck against what we were hearing through the official reporting during the trial running meetings.

KATE MCGRANN: And generally were those -- what was the result of that crosschecking activity? Were you finding that the reports that you were receiving officially were corroborated by what the field observation team was seeing?

RICHARD HOLDER: As much as could be done at the meeting, then I would say that there was corroboration.

KATE MCGRANN: Okay. And then to put it differently, did you -- were there any concerns

formed based on what you were hearing from the field observation team when it was held up against the official reports that were being generated from trial running?

RICHARD HOLDER: There were not significant concerns that impacted the results of the trial running. There were deficiencies that were brought forward by the field observation team that had not previously been identified during testing and commissioning. These were -- a number of deficiencies and anomalies were identified with the functioning of the elevators, and specifically the audible announcement that was provided on the elevator as the elevator moved up and down, the indicator lights on the outside of the elevator shaft to indicate which direction the elevator would move in, and the functioning of the air conditioning units within the elevators. There were issues that were brought forward related to those items that had not previously been identified, so those were brought forward and added to the deficiency list and brought forward with RTM and OLRTC for rectification.

KATE MCGRANN: Other than the new issues identified with the elevators, any other

deficiencies or issued identified by the field observation team during the trial running period that hadn't previously been identified?

RICHARD HOLDER: There probably were others, but what I can -- what I can recall is that the deficiencies that caused the most response, both from the delivery team and subsequently OLRTC and RTM, were related to the elevators. I can recall that there were issues around standing water on some platforms, scuffed paint, somewhat cosmetic deficiencies that we considered to be quite minor in the overall scheme of the running of the system.

KATE MCGRANN: A couple of questions about the evaluation of the maintenance component of the system during trial running. So in order to walk through those questions, I'm going to take you back to OTT377178, which is the trial running test procedure. And we're going to go over to page 6 of this document. I'll see if I can make it bigger.

So I'm looking at Section 3.5 of this document entitled "responsibility matrix," and in the second box in this table, stakeholders, "RTM, including Alstom maintenance," the question that I have is can you explain to me what's included in the operating the YCC bracket help desk slash work

orders?

RICHARD HOLDER: The YCC is the yard control centre that was based at RTM's facility on Belfast Road. There were a number of functions that were run out of the YCC. The YCC also served as a backup Transit Operations Control Centre should there be any issues with the TOCC, therefore the YCC had a very important role in the functioning of the system.

One of the components was the interaction with the IMIRS program which I had talked about previously. The IMIRS program included the requirement for RTM to have people on a help desk that would respond to calls from the TOCC.

So the way that the interaction occurred between the TOCC and RTM was that if a deficiency, if a problem, was viewed within the system - a defective camera, a door that was not working properly - then a control room operator would use the help desk to call that deficiency through to the help desk at RTM. The personnel -- the maintenance personnel working for RTM would then create a work order based on that call for assistance, and then it was RTM's responsibility to

follow the flow of that work order from reception, from creating a request for maintenance teams to respond in the field to receiving a response from the field that work had been completed and ultimately closing that work order. That was all the function of the help desk as part of the IMIRS system.

KATE MCGRANN: And then if we scroll down to the next box, we've got OC Transpo, and then what I wanted to ask you about here is the entry "operate the help desk." So I think you explained a little bit of that, but if you can just help me understand how this help desk and the help desk under the RTM responsibility worked together, that would be useful.

RICHARD HOLDER: I would agree that the language there is somewhat confusing. The help desk is -- you could consider the help desk as an interface, and on one side we had the client, OC Transpo, that had an operator that was responsible for making requests through the help desk. So in terms of that particular line there, the definition of "operate the help desk" would be to provide staff that would make requests through the help desk to RTM. On the other side of the interface of

the help desk was RTM that was responsible for responding to the requests for maintenance or rectification of a defect.

KATE MCGRANN: And at any point in time during trial running or revenue service, was there any change in who was responsible for the operation of the help desk that you've just described?

RICHARD HOLDER: Not that I'm aware of.

KATE MCGRANN: The field observation team that you've described to us and the work that they were doing testing the various elements of the system, following the public launch of revenue service, did anybody continue on behalf of OC Transpo or the City to test the elements of the system when the system was open?

RICHARD HOLDER: From the delivery office, from the rail office, then there were no longer staff involved in the works of the field observation team. And I would like to restate the purpose of the field observation team: We were careful when we selected the naming of that team to make it clear that they were making observations in the field and that they were not testing.

KATE MCGRANN: Okay.

RICHARD HOLDER: The testing -- the

testing of the devices, the testing and commissioning period had finished at that time. We had already provided confirmation that substantial completion had been achieved and that the performance of the testing and commissioning period had been achieved. We were now in the final steps before we moved into revenue service. The field observation team was an entity that was not included in the project agreement, but it was felt that for the trial running to truly replicate not just the functioning of the trains but also the functioning of all the systems within all the stations, then it would be necessary to have such a team that would act as the passengers and commuters making use of the various systems.

KATE MCGRANN: Okay. And when you say it was felt that that was -- that activity was necessary, who was it felt by? Who thought the field observation team was necessary?

RICHARD HOLDER: Me, particularly. I had not heard that such a team had been created on other transit systems. There was lots of discussions, obviously, between myself and other members of our staff, and we developed the field observation team very shortly before the trial

running began, maybe within the last couple of months that that field observation team entity was created.

KATE MCGRANN: Did RTG -- was RTG asked about what their view was on the field observation team before that team was implemented?

RICHARD HOLDER: My recollection was that the City put it to RTG and RTM that this was an exercise that the City wanted to put in place. We explained how it would work. We explained that it was not a continuation of the testing period, that it was an observation team only. We -- I don't believe we formally asked for input into the documentation; however, RTM and RTG representatives were invited to the various training sessions that we set up for the dozens and dozens of field staff that were required for the field observation team.

I recall that we had representation from Tom Pate, who was working with RTM; from Peter Lauch, who was the head of RTG. I believe Roger Schmidt was present from OLRTC and a number of members from the design build team were present as we explained how that whole exercise would roll out. And broadly speaking, they were supportive, and they felt it was a good idea, but from my

perspective, their -- the assent of RTG was not required for the City to undertake this exercise. I felt strongly that this was going to be a very useful function and of great benefit for the City to understand how the system would really react and respond with this surrogate passenger team.

KATE MCGRANN: Moving into revenue service, so after the public launch, was there anybody from the City who was moving through the system and engaging with the system in order to observe the maintenance response?

RICHARD HOLDER: I can talk from a slightly remote position because, at that time, I was not involved in managing any of the teams that were involved in the oversight of the operations and in the oversight of the maintenance. What I know is that there were many members of staff from OC who were present on the platforms in the first several weeks of revenue service availability to provide assistance to passengers who were -- who were, you know, new to the system, and it was expected that people would need help with the ticket machines, navigating through the stations, understanding which platform to get on trains. Those staff were specifically passenger focussed.

I know that there was also a team that were more back-of-house focussed, so "back of house" being all those communications rooms and equipment rooms, tunnel ventilation rooms that are not open to the public. My understanding is that there was a team from OC that was travelling through the system and checking on the work that RTM was undertaking at that time and also familiarizing themselves with the system, but I cannot speak to the number of people or the frequency of their visits.

KATE MCGRANN: The observations that the field observation team made during maintenance, to the extent that they identified any deficiencies, degraded conditions, other issues, would those all have been captured by -- captured in the deficiencies list?

RICHARD HOLDER: Observations related to maintenance deficiencies would have been brought forward onto the deficiency list, correct.

KATE MCGRANN: And if they observed any other deficiencies with the system, where would those observations have been captured?

RICHARD HOLDER: They would have been captured through the help desk function.

KATE MCGRANN: And the idea is that -- go ahead.

RICHARD HOLDER: Can I -- I feel like I need to expand on the work of the field observation team or the results of the work of the field observation team. The field observation team were bringing forward items that they were seeing within the field that they felt were inconsistencies or deficiencies. They would be brought forward to the Transit Operations Control Centre, and then the Transit Operations Control Centre, through the help desk, would make requests through the help desk to RTM for attention to those -- those deficiencies or defects or issues.

In that period of trial running, items that were recorded that had previously been on a deficiency list were maintained on the deficiency list. New items that were observed sometimes -- well, sorry, always became a work order item. They may or may not have been added to the deficiency list, depending on the severity of the issue and the speed with which that deficiency was addressed in, was rectified by...

KATE MCGRANN: And can you speak to the number and nature of retrofits outstanding for the

vehicles at the end of trial running?

RICHARD HOLDER: I was aware that there were a number of retrofits that were still outstanding on the vehicles. The delivery team and OC Transpo had been tracking several key retrofits for many, many months, possibly over 1 year, over 18 months, and so it was known that as we went into revenue service, there were still retrofits that were outstanding.

KATE MCGRANN: And how were the needs for the retrofits accounted for in operations and maintenance? And what I'm trying to get at is was it the case that there were accommodations that could be made in the approach to operations and maintenance that would account for the retrofit until it was implemented?

RICHARD HOLDER: The simple answer would be to say yes, but of course it's very complicated, and it would really be necessary to go through each individual retrofit to be able to give a more accurate picture. The summary position from the City and from Alstom and from RTG and from RTM and from the independent certifier was that although retrofits existed, they did not detract from the city's enjoyment, of the city, for the

full use of the system. And we had involved many experts, many fleet experts with many, many decades of experience of dealing with fleets all around North America and around the world, and the general position was that these kinds of programs of retrofits were certainly not unusual for fleets of this kind.

KATE MCGRANN: You mentioned the independent certifier as a party that was weighing in on this. Did you understand the independent certifier's role to be -- to involve anything more than certifying that whatever had been agreed to between the City and RTG had been met or fulfilled?

RICHARD HOLDER: I believe the role of the independent certifier was much broader than that. There were -- there was very much a focus of the independent certifier's engagement at the time of substantial completion, at the time of the completion of testing and commissioning, during the acceptance of each of the vehicles, and during trial running.

It is true that they were very much involved and engaged and part of all the team meetings at that time; however, their role was bigger in that they were also there to deal with

disputes between the parties. They were there to certify payments from the City to RTG on the basis of the milestones, which were laid out in the project agreement. They were on site regularly. They participated in many of the meetings throughout the whole project, but certainly within the last few years of the project, as the need to verify and validate documentation became more and more important as part of the closeout of the project, then the independent certifier's team -- their presence became more felt, especially around the validation piece for requirements management, where the independent certifier plus the City's team were involved in validating documentation that the design builder was putting forward as evidence that requirements were being met.

KATE MCGRANN: So where there is no dispute between the City and RTG as to requirement has been met, what is the role of the independent certifier there?

RICHARD HOLDER: To provide an opinion on whether they agreed with the City or RTG on whether that requirement had been met. So it could be the case that RTG and the City agreed that documentation that was put forward validated a

particular requirement, but the independent certifier could have disagreed. I am not aware of that ever occurring, in fact, but that was considered to be their role, that the agreements that were being reached as we moved forward through the process of validating requirements that there was three parties involved: It was the City, it was RTG, and it was the independent certifier.

KATE MCGRANN: Was it your understanding that part of the independent certifier's role was to look at any agreements that were made between the City and RTG as against the project agreement and, if the agreement between the City and RTG would alter what was being delivered to the City, to intervene or interfere with that agreement?

RICHARD HOLDER: I would agree with that statement. I am trying to think of an example of where that would have occurred. We had a whole process that existed for managing changes to the project agreement, and I can't recall if we've already discussed the Change Control Board and the process involved in making changes to the project agreement, but the independent certifier was made aware of the changes that occurred as part of that

variation process, so they were aware of all those changes.

In terms of other agreements, I think that the big agreement that was not stated in the PA would have been the introduction of the field observation team, and my recollection is that the independent certifier certainly had no objections to that process and agreed with the purpose and the functioning of that team, but to your proposition that that was one of their roles, I can't think of an example right now.

KATE MCGRANN: With respect to the term sheet that the City and RTG entered into around the end of trial running as part of revenue service availability achievement, what was your understanding of the independent certifier's role in evaluating or weighing in on the contents of that term sheet?

RICHARD HOLDER: I don't recall specifically how the independent certifier was engaged in that term sheet. I certainly would have expected that they would have seen that term sheet and provided an opinion on the term sheet before it was finally agreed. I am not sure if that happened, though. That's not to say it didn't

happen.

KATE MCGRANN: The opinion that you would expect them to provide on the term sheet, what question would they be opining on?

RICHARD HOLDER: At that stage, at the end of trial running, there were two remaining steps, I recall, between the end of trial running and moving into revenue service availability. So the first step would be agreement between the parties that the trial running objectives had been met, so that would have been a milestone that the independent certifier agreed to.

The other element -- the other step that was required was the confirmation from the safety auditor that at the time of revenue service availability all the safety requirements had been met. The independent certifier's role would have been to have received that confirmation, but it was not expected that the independent certifier would have an objection to the position of the independent safety auditor. It was expected that the independent certifier needed to have that confirmation as part of the penultimate step before moving into revenue service availability.

I'm describing what I recall of the

project agreement steps between trial running and revenue service availability, that the term sheet was not a -- as best to my recollection, it was not a document that was described in the project agreement, but it was felt from the City's side - and I believe that the City received legal advice from its legal counsel at the time - that the issues that were considered to be still outstanding in terms of the delivery of the contract should be confirmed in writing through the mechanism of a term sheet, including potential redress to financial issues. They needed to be captured in a term sheet at the time of revenue service availability.

KATE MCGRANN: Okay. And your reference to the safety auditor, was that the independent safety auditor, Sergio Mammoliti from TÜV Rheinland?

RICHARD HOLDER: Yes.

KATE MCGRANN: And you said that you would have expected the independent certifier to provide an opinion or opine on the term sheet, and my question was what question did you think their opinion would be responding to? Like, what did you expect them to opine on with respect to the term

sheet?

RICHARD HOLDER: I do not recall making these considerations at the time. I can speak to you now as to what I think they would have opined on, and I believe what they would have opined on was, was there any information in that term sheet that nullified previous revenue service availability requirements, of which there are seven. If the independent certifier had seen information in there that had nullified any of those revenue service availability requirements, then I would have expected them to have stated as such.

KATE MCGRANN: When you say "if they saw information that would have nullified revenue service availability requirements," what -- can you just help me understand what you mean by that.

RICHARD HOLDER: Revenue service availability was a defined term in the project agreement. One of the requirements of revenue service availability was that seven other requirements had been met, and those seven requirements, if I can recall them, were the completion of the civic works, the substantial completion of the fixed assets, the substantial

completion of the rolling stock, the vehicles; it was satisfactory performance of the testing and commissioning period; there was the confirmation at that time that the safety requirements had been met; there was a successful performance of trial running, and I'm assuming there was one other that I can't recall.

Each one of those requirements was validated in the months leading up to revenue service availability, and when I say "nullified," it could have been the case that there was information within the term sheet that had made one of those previous statements about completion -- making that inaccurate.

So for instance, substantial completion. So substantial completion meant that the system was functioning and had full use and enjoyment by the city. That was the broad definition of substantial completion. There were also more kind of analytical definitions in terms of the Liens Act, 97 percent of the overall value of the fixed assets, so there was a calculation done on the value of the deficiencies that were remaining. So as well as use and enjoyment, there was also a calculation done to substantiate

substantial completion.

So for instance, if within the term sheet there was work identified as not being completed that exceeded the previous value of minor deficiencies or significantly impaired the city's enjoyment of the use of the system, then that would have nullified the previous substantial completion notice that had been provided, and to the best of my knowledge, that had not occurred, but that would have been something that the independent certifier may have provided an opinion on at that time.

KATE MCGRANN: At the end of trial running, what was your view of the readiness of the maintenance team for revenue service?

RICHARD HOLDER: My opinion on the readiness of the maintenance team had been formed prior to the start of trial running in the work and in the feedback that was given to me from the subject matter expert who was reviewing the preparedness of RTM.

So I had previously stated, I believe, that Parsons had a team that were supporting the City with operational and maintenance matters, and the person who was responsible on the maintenance side was Tom Fodor, who was reviewing documentation

provided by RTM and making regular field visits to their maintenance facility and having interviews with the maintenance staff. And Tom Fodor's position was that the organizational structure of the RTM team was sufficient, that their -- the training and the procedures that were in place to deal with maintenance were sufficient, that the availability of spare parts on site, the availability of specific maintenance equipment was sufficient to provide the maintenance services within the project agreement.

In terms of any change to that perception, during the trial running period, there was a recognition that there were many items of small deficiencies that were requiring attention from RTM that were additional to the -- what could be considered as routine maintenance for the vehicles, for the track, and for the various systems in support of the light rail system.

At that time, there was a merging of activities between the work of the constructor in building the facility and the work of the maintainer in conducting responsive and regular maintenance for the system. Would you like me to expand?

KATE MCGRANN: Yeah, could you explain that in a little bit more detail, please.

RICHARD HOLDER: OLRTC was the entity that was responsible for the construction, and theoretically, RTM would -- in a perfect world would have stepped in with all the construction fully complete, with all the systems fully working, and there would have been a clean handover from the construction team to the maintenance team, and the maintenance team would have focussed on providing their maintenance tasks.

What occurred on the light rail system on the Confederation Line project was that there were deficiencies that were still remaining, as was allowed for in the contract and as is common in construction projects. There were deficiencies that were remaining for somebody to fix, and sometimes that was OLRTC staff, and sometimes it was RTM staff.

What the City did not have visibility on was whose resources were being provided for rectifying those deficiencies. It was not something that the City had control of under the contract. There was an expectation that OLRTC would maintain presence on site, maintain staff on

site to complete those deficiencies and that RTM would focus on their role of being the maintainer of the system.

During the trial running period, it was apparent that some of the deficiencies which were there from substantial completion were now being managed, if not fully rectified, by RTM staff but certainly managed by RTM staff. So there was an additional workload for RTM supervisory staff in coordinating between their own staff and OLRTC.

KATE MCGRANN: Based on what you've just described there, did that at all impact your view of the readiness of the maintenance side of the operations for revenue service?

RICHARD HOLDER: It was felt that in the first few weeks of operations, it would be necessary for RTM and OLRTC to have extra resources available to quickly deal with deficiencies that had been outstanding since substantial completion but also to deal with the maintenance, the additional maintenance responsibilities that would be required because now the system was in full operations.

So there were requests that were made by the City to RTM and to OLRTC to ensure that

their subcontractors, their major subcontractors such as Alstom, such as Thales, such as Willowglen that was a supplier for the SCADA system, such as -- I mean, there were several other major suppliers of system equipment. The City requested that RTM and RTG have extra staff available.

KATE MCGRANN: And what was the response to those requests?

RICHARD HOLDER: There was agreement from RTG's representative, Peter Lauch, that it made sense for those first -- the first few weeks to have additional personnel on standby, and there was also agreement from OLRTC and from Alstom that it would be necessary to have extra staff on standby.

KATE MCGRANN: And are you able to speak to whether that was in fact what happened?

RICHARD HOLDER: I am aware that those staff were available in the early days, those additional resources, but as to how long that additional level of resourcing was maintained, I can't speak to that.

KATE MCGRANN: And turning back to Mr. Fodor's opinion that the organizational structure and the procedures were in place, the

spare parts were in place, the equipment was sufficient for what was laid out in the project agreement, was it the case that his opinion was based on the system described in the project agreement as perfectly compliant? I guess what I'm really trying to ask you is, is what is laid out in the project agreement and his opinion based on that different than the reality of the system at the end of trial running? There's deficiencies; there's retrofits, et cetera. Do you know if his opinion took the actual state of the system into account?

RICHARD HOLDER: I would say that his opinion was based on the two circumstances as you described them, the compliance with the project agreement but the real-life readiness of a maintenance team to take over maintenance.

KATE MCGRANN: And when did he deliver his opinion on the readiness of the maintenance side to take on the system as it existed to you?

RICHARD HOLDER: As I said previously, the opinion about the readiness of the maintenance team was provided, you know, in the weeks leading up to revenue service availability, so it would have been provided sequentially based on agreement around certain documentation. So for instance, the

maintenance and rehabilitation plan, which I had talked to previously, there were a number of iterations of that document. We finally got to a point where that document was considered to be satisfactory, and I believe that that was in early 2019.

So that would be an example of, from a documentation perspective, where Alstom is -- Alstom and RTM is indicating the contracts that they have in place for maintenance, the frequency and the level of maintenance activities that would be taking place on the various systems, the equipment that was available, the people that were ready, that was all captured in that maintenance and rehabilitation plan.

So that was one place where that kind of opinion was provided, but also at substantial completion, from a requirements management perspective, there was the review of the project agreement requirements in relation to maintenance activities, and it would have been at that point that the official opinion would have come through that the maintenance requirements had been addressed, the maintenance requirements of the project agreement.

I would like to add for context that the seven revenue service availability requirements were clearly stated as being needed for revenue service availability. There was not a specific requirement -- there was not an eighth requirement for full confirmation about the maintainer's ability to maintain the system.

So in terms of the format of the project agreement and the format of the overall P3 construct, there was an expectation that the maintainer would be very much commercially incentivized to provide the maintenance team along with its equipment and other resources that would be required to provide availability of the trains such that they met the contractual obligations from a day-to-day basis so that OC Transpo would make their contractual payments.

There was an overall philosophy in the construct of the project agreement that it was not necessary to tell RTG exactly how to undertake the maintenance because as a professional engineering team and a professional maintenance team, they would come up with the best team, the best commercially viable way of providing those maintain duties. It was very much based on the commercial

incentive. If RTM did not complete those maintenance requirements, then that would result in a consequent -- consequently in a reduction in availability of the system, and they would not get paid. And unfortunately, that's what has been experienced.

KATE MCGRANN: So just so that I can understand what Mr. Fodor opined on and the boundaries of that opinion, he's opining on whether the requirements of the project agreement, from a maintenance perspective, have been met? Is that right?

RICHARD HOLDER: Yes, correct.

KATE MCGRANN: Was he asked to look at the reality of the system and the various pressures on maintenance tasks that the maintenance team would be required to achieve once the system opened for launch and opine on whether he thought that they realistically would be able to do that?

RICHARD HOLDER: He was -- he provided an opinion on that question at the time of substantial completion. His -- he did not bring forward overall concerns about RTM's ability to maintain the system. He was satisfied that from a project agreement, the project agreement

requirements had been met for maintenance. In addition to that, he did not see any -- he did not have any objections that needed to be brought forward around RTM's ability to undertake the maintenance at revenue service availability.

KATE MCGRANN: Was it part of his job to consider that?

RICHARD HOLDER: I would say that it was part of his job. Whether it was clearly expressed to him in such terms, I am not sure, but in terms of his professional service as an engineer providing information to the City, I would have expected him to have provided that information.

KATE MCGRANN: Okay. And just so I understand, he expresses an opinion at the time of substantial completion.

RICHARD HOLDER: Correct.

KATE MCGRANN: And he was also required to express an opinion at the end of trial running or at revenue service availability?

RICHARD HOLDER: No, he was not required to express an opinion at that time.

KATE MCGRANN: What was his role following substantial completion, the achievement of substantial completion?

RICHARD HOLDER: I would have to recall exactly what engagement we had with Mr. Fodor during that period. I think we may have reached out for assistance in the resourcing of the team around the field observation work. I would have -- but I would have to go back and check what his engagement was during that period.

KATE MCGRANN: Other than Mr. Fodor, was there anybody else on behalf of the City who was looking at the question of whether the maintenance side of operations would -- whether it was realistic to expect that the maintenance side of operations would be able to handle the various demands that would be placed on that side of the system when it opened to public service?

RICHARD HOLDER: There were a number of people on the delivery side, and there were a number of people from OC Transpo side. So on the delivery team side, we continued to have members of the independent assessment team take part in reviews of the system, the passenger-facing side of the system, the trains and the stations, but people -- but members of the independent assessment team were also involved in reviews of the MSF.

On the OC Transpo side, from the

operational side, they had a team that was taking over the responsibility of contract oversight. They had team members that were engaged on a daily basis with RTM, both at OC's offices and at Belfast Yard, understanding the maintenance activities that RTM was involved in.

KATE MCGRANN: And that was the case that both of those groups, the members of the IAT and the members of the group at OC Transpo responsible for contract oversight, that they remained engaged with maintenance up until the point of public launch?

RICHARD HOLDER: Up to and, in the case of OC Transpo, beyond. So there was a -- the handover of the operations, you know, occurred several months before the official revenue service availability date. As various systems were brought online by RTG, then OC's staff started to become engaged and started to become familiar with those systems.

For instance, the Transit Operations Controls Centre, which is staffed by OC staff, that had been running for many, many months before revenue service availability to -- both as a training function, as support to the testing and

commissioning period, but also as a familiarization for OC Transpo staff. Another example would be the IMIRS help desk function, which was functioning several months before revenue service availability, IMIRS -- the IMIRS help desk being integral to both the TOCC and the YCC.

KATE MCGRANN: Okay. And other than what you've already described to us about the view formed that additional resources would be needed in the early days of the system that were expressed to RTG, any other concerns being raised through trial running or as the system heads towards revenue service about whether the maintenance side is going to be able to handle the demands of the system when it opens?

RICHARD HOLDER: There was an expectation that had been expressed to the City by various subject matter experts that the system would go through an evolution over the first 12 to 18 months of operations. There is a term that is used called the bathtub curve which is used to describe the reliability of the system - of a typical system, including an LRT system - and the bathtub refers to the shape of the reliability curve for various systems from the day that they

become activated through the first 12 to 18 months of their operations.

So at activation, straight out of the box, with very little use, then systems function very well. So we have a high level of reliability at the very beginning of the use of an activated system, but then over the first few months, then issues start to crop up or -- there are breakdowns, not necessarily in all the components of the system but in one or two components of a system - and I'm speaking generally about systems - but the reliability of -- as a whole of that system starts to reduce for a number of months. And then as an operator and maintenance team replaces systems and optimizes the use of those systems, eventually there is an increase in reliability that occurs over a number of months.

So the bathtub curve refers to the shape of the graph which starts off with high reliability, then drops off quite quickly to a point where the reliability is reduced, and then again picks up once certain elements of -- are replaced within the system and the system becomes optimized between both the hardware, the software, and the teams that are responsible for operating

and maintaining.

So I'm providing that to the team as context that that was -- there was an overall understanding that that reliability curve was likely to happen on this project, and so there would be issues at the beginning. The -- there was not an anticipation that we would have issues that would result in the system being completely nonfunctional, but it was expected that there would be issues that would impact the reliability and therefore impact the availability of the system, and those would occur quite early.

KATE MCGRANN: So --

RICHARD HOLDER: So in terms of your question of were there concerns, then there was a general understanding that because this was a new system, there would be issues in the first few months that would need to be rectified.

KATE MCGRANN: So I just want to make sure that I understand the information that you've provided there. What I've taken down in my notes is that right out of the box, there will be a high level of reliability. Then issues will start to crop up. Those issues will be resolved, and then you're looking at a higher level of reliability

again. You said that the expectation expressed to you by the various experts was that the system would go through an evolution through the first 12 to 18 months. So when you say that you expected issues to present themselves quite early, can you help me understand when within the 12 to 18-month time frame you're expecting this sort of -- these issues to present themselves?

RICHARD HOLDER: That -- there was an expectation that could have been within the first few months.

KATE MCGRANN: And how does the first few months fit within the 12 to 18-month evolution period?

RICHARD HOLDER: In the first few months, the system is now fully functional, operating 18, 19 hours a day fully loaded with passengers - that is, providing a service load to the system that had not previously been provided - so there was an expectation within those first few months that some of the systems may well suffer from some failures in equipment, failures in software, failures in hardware, and there was a potential that they would be compounded over a period of a number of months.

It was not expected that availability of the system, in terms of train availability, that that would be impacted, but it was expected, for instance, that there may be an escalator would have to be shut down, an elevator would have to be shut down, a -- you know, a number of cameras would have to be replaced. And over a period of the first few months, those issues would become apparent, and they would be repaired, and with time, there would be fewer and fewer new issues arising and the reliability of the system would increase.

KATE MCGRANN: What was the basis for the belief that while an elevator or an escalator or cameras may have an issue, there wouldn't be issues that would affect the availability of the system?

RICHARD HOLDER: There is redundancy built into the system. When I talk about availability of a station, then a station can be considered to be available even if one of the elevators is nonfunctional. So there are two elevators on either side of the platform, so should somebody who is -- needs physical help, is using a wheelchair, they have -- if one elevator is down, then they can use another elevator. So there is --

that's an example of redundancy in terms of the vertical movement of people at the stations.

There is, similarly, redundancy in many of the other systems - the traction power substations that provide the power to various sections of the track, they are built with redundancy. So if one traction power -- there are 11 traction power substations. If one of the traction power substations becomes faulty for whatever reason and is no longer able to provide power to the system, then the adjacent traction power substations fill in the gap, and they continue to provide power. So whilst that specific traction power substation is faulty, it does not impact the availability of the whole system.

So when I talk about availability of the system, there is already redundancy built in as part of the design of the system that we can accommodate certain breakdowns, certain deficiencies, and in addition to the need to work on a component or an element of the system because there is a deficiency, there is also the need to undertake maintenance activities, and in order to undertake maintenance activities on a system, it is necessary to -- sometimes necessary to shut it

down, and we want to be able to do that maintenance without impacting the availability of the system. So that redundancy is built in and therefore the system can accommodate a certain amount of deficiencies and a certain amount of rectifications that are going to be required without impacting availability.

A key question is related to the number of trains that are available. The system was designed to have 34 available trains at all times, with -- which -- sorry. It was designed to have 30 trains available at all times, 30 trains combined to make 15 two-car consists with two spares, two hot spares. Two hot spares and two in for maintenance, I believe that was the number. So 34 trains - 30 in use, 2 ready for -- as hot spares, and 2 in maintenance. So there was debate and discussion around that redundancy number: Is that the right redundancy number to only have -- to expect to have 32 of the 34 trains available for operations at all times?

KATE MCGRANN: And what was the outcome of those discussions?

RICHARD HOLDER: At the time, the outcome was -- well, an outcome -- there were

concerns about the spare availability, but it was felt that that was -- it was achievable at that time.

KATE MCGRANN: And just so that the terminology -- a hot spare is a train that's ready to go upon demand? Is that fair?

RICHARD HOLDER: Correct.

KATE MCGRANN: The -- what was the number of trains and hot spares available when the system went into public service?

RICHARD HOLDER: I don't know exactly. I would -- we have that number.

KATE MCGRANN: Was there any consideration given prior to the launch of revenue service of keeping the parallel bus service in service for longer than the first 3 weeks in light of concerns expressed, in light of this bathtub curve and the unpredictability of what concerns may arise as part of the bathtub curve that you've described?

RICHARD HOLDER: I am only aware of discussions that the parallel bus service would be provided for the first few weeks. I wasn't aware of any discussions where it would have been considered that that parallel bus service would be

provided for a longer period. The expectation was that it would not be required for a longer period, and that's why we were providing the milestone of revenue service availability for the transit system.

KATE MCGRANN: Other than the parallel bus service, were other -- were any other precautions or accommodations or approaches considered to account for the potential implications of this first 12 to 18 months of the bathtub curve that you've described?

RICHARD HOLDER: The project agreement asked for 34 vehicles on the basis that in the peak period, to carry the expected passenger load of 12,000 people per hour per direction, we needed to have 15 vehicles running for those peak periods in the morning and in the p.m. That was at the time of the signing of the project agreement.

With the passing of time, the actual volume of passengers that needed to be carried by the Confederation Line system were very -- were very accurately known because the Confederation Line was replacing the bus service, and OC Transpo and the planning unit knew exactly how many passengers were being carried at the time of the

launch of the Confederation Line. So it was known that we did not need to run 15 vehicles, 15 two-car consists, during the peak periods. It was -- it was possible to manage the capacity of the line and have fewer light rail vehicles operating during those peak periods.

There was certainly discussion around reducing the number from 15 to 13, and that was subsequently changed as part of one of the trial running criteria during trial running. And I think the number could even be less, but I would -- that would be a question I would need to take away as to exactly the number of vehicles that are required to deal with the capacity.

So your question as to, you know, what were some of the other factors that the City had control over to help with this potential of the bathtub curve of the early reliability issues, that was one of the big ways that the City was able to have control over the number of vehicles that were available. So if there were issues with the vehicles, then it was possible to reduce the number of vehicles that were available.

KATE MCGRANN: Okay. And anything else?

RICHARD HOLDER: From an equipment perspective, not that I can think of. The other issue, as I talked about before, was related to resourcing. So one of the ways of addressing this was ensuring that the maintainer and the constructor had sufficient resources available to deal with those issues whereby, you know, we would expect reliability issues in the first few months. So there was -- you know, that was also planned for, that RTM would need extra resources at the beginning of the project -- at the beginning of service.

KATE MCGRANN: Mr. Coombes, do you have any follow-up questions based on anything we've discussed so far?

MARK COOMBES: I do not.

KATE MCGRANN: Okay. We'll take the morning break now. It's just coming up on 10:30, so we'll come back at 10:40, if that works for everybody.

PETER WARDLE: Thank you.

-- RECESS AT 10:29 --

-- UPON RESUMING AT 10:40 --

KATE MCGRANN: So before we leave the topics we were discussing before the break, I think

I was asking you what the number of vehicles and the number of hot spares there were at the time of public launch. And I'll ask through your counsel that you go and come back to us with that information, if you would.

PETER WARDLE: Yes, we will.

RICHARD HOLDER: Yes, I can do that.

KATE MCGRANN: Stepping back in time on the project, I'd like to you speak to your involvement in the creation of the safety management system for Stage 1 of Ottawa's light rail transit system.

RICHARD HOLDER: Sorry, I'm not clear that that's a question.

KATE MCGRANN: Pardon me? Oh. Could you speak to your role, like describe your role, in the creation of the safety management system that was to be put in place for Stage 1 of Ottawa's light rail transit system when it went into service.

RICHARD HOLDER: I took on the role of manager of light rail systems and operational integration in the early part of 2015, and part of the role of that position was oversight to the safety and security aspect of the project.

I reached out to a consultant who was working with STV called David Morgan, and he helped me to develop the terms of reference for the safety and security certification review team as specified and as required within the project agreement. So my role at that time was to chair that safety and security certificate review team meeting and to provide oversight to any of the issues around safety and security as it applied to the light rail system.

KATE MCGRANN: And what was the team's purpose or goal? What function did they fill?

RICHARD HOLDER: The team was made up of representatives from the various parties, and the overall goal was to ensure that all the safety and security requirements of the project had been addressed at both substantial completion and at revenue service availability.

KATE MCGRANN: Who at the City was responsible for developing the safety management system that the City would apply to the system?

RICHARD HOLDER: That responsibility was held by Jim Hopkins, the chief safety officer at OC Transpo.

KATE MCGRANN: And did the safety and

security certification team review that safety management system? Was that part of their purview?

RICHARD HOLDER: No, not that I recall. The safety and security certificate review team was aware of the progress that was being made in the establishment of the safety management system. Jim Hopkins, the chief safety officer, provided updates to the team as to the progress, but there was not a team or approval function for that safety management system within the safety and security review team.

KATE MCGRANN: And was there any review and approval function at all for the safety management system held by anybody, that you know?

RICHARD HOLDER: As I recall the language in the project agreement, it was the responsibility of RTG to support the development of regulations and the development of the safety management system. But the adoption and the ownership of the safety management system was always anticipated to be with OC Transpo.

As an example of the mechanics of how that worked, the project agreement referred to a regulatory timetable, which was a deliverable from RTG. The regulatory timetable existed as a

spreadsheet that included all the standard operating procedures that would apply to operating the light rail system, including the engagement with emergency responders. So the specific term in the project agreement was regulatory timetable. In fact, it was more like a list, although it did include dates for when those deliverables would be met. The documents that were included in the regulatory timetable, the standard operating procedures, became one of the key components to the overall safety management system that was developed by the chief safety officer.

KATE MCGRANN: Do you know if there was any -- if anybody reviewed the adequacy of the safety management system prior to the launch of revenue service?

RICHARD HOLDER: I am not aware of what review was undertaken on the safety management system.

KATE MCGRANN: Are you familiar with a document called the operational restrictions document?

RICHARD HOLDER: I am.

KATE MCGRANN: Did you have any involvement in the creation of that document?

RICHARD HOLDER: I was involved in reviewing the document and ultimately the acceptance of the contents of that document in terms of determining whether any of those restrictions amounted to a nullification of, as I previously stated, either testing and commissioning requirement, substantial completion requirement, trial running requirement, or overall revenue service availability requirement.

My recollection of the operating restrictions document was that it was a document that was created very late in the process, so during the trial running period, and it listed certain elements of the project that, from a safety perspective, were not as designed and therefore listed the mitigations that needed to be in place until those various design functions were working properly. But that was expected to be after revenue service availability.

And so one key example of that was the integration of the platform edge door cameras with the operations of the system, the ability for the screens within the cab of the train to receive information from the platform edge cameras was not functioning reliably, and so as a means of

mitigating the unreliability of that safety system, Alstom agreed to have spotters on each of the platforms to provide -- effectively to provide the function of the cameras. The spotters were on the platforms to ensure that the train doors were clear of any potential entrapment of a person or an object before the train departed, and that was a mitigation that was put in place, was one of the operational restrictions that was put in place to deal with that part of the system that was not functioning properly at revenue service availability.

KATE MCGRANN: Did anybody ever raise with you any particular maintenance needs set out in the operational restrictions document or otherwise arising from the nature of the rail selected for the system and its appropriateness for the light rail vehicle that would be running on it?

RICHARD HOLDER: Not that I'm aware.

KATE MCGRANN: Did anybody ever suggest to you or to the City more generally, to your knowledge, that the rail was not appropriate for the vehicle that was running on it or that it would require more or different maintenance than originally envisioned as a result of the nature of

the rail and the nature of the vehicle?

RICHARD HOLDER: Not that I'm aware. Not that I recollect.

KATE MCGRANN: What steps were taken to ensure that the operational restrictions document would be followed during revenue service?

RICHARD HOLDER: The document was part of a suite of documents that was handed over to OC Transpo, to the operator, with the expectation that as part of their management and oversight of the service availability contract that those issues would be dealt with.

KATE MCGRANN: And do you know if anyone in particular was given ownership of ensuring that that document was complied with? Other than handing it over, what was done to ensure that it would be used in practice?

RICHARD HOLDER: In terms of the ownership, the overall ownership of the document and the actions that were required were -- within that document would have been both with Troy Charter as director of operations and with Jim Hopkins, the chief safety officer at that time.

KATE MCGRANN: And do you have any insight into the plans for how that document was to

be implemented and compliance with it was to be overseen?

RICHARD HOLDER: I am not aware of the process that was followed to track those items. I am aware that there were regular meetings taking place to deal with the various deficiencies that existed. So there was a responsibility on the delivery team side, so on my side, to continue to work with RTG and OC Transpo on the rectification of deficiencies. And that's -- that work is still underway.

And so many of the items that are in the operational restrictions document are also included on the deficiency list. So that accountability for delivering the system as included within the project agreement, that's still with the delivery team. However, there are -- some of those operating restrictions that have an impact on the day-to-day operations of the system, and so the operations team has been kind of more engaged on a day-to-day basis with trying to ensure that that restriction is lifted.

So for instance, the ability to release the spotters from the platforms, that has been something that has very much required a lot of

coordination between RTM, RTG, and the operator in terms of understanding, you know, at what point is the system ready to be able to release those spotters and to be able to release that restriction.

KATE MCGRANN: Jumping back in time again, was a concept of operations developed for this system, to your knowledge?

RICHARD HOLDER: A document was created, the concept of operations document.

KATE MCGRANN: And at what time in the project was that created?

RICHARD HOLDER: It was created, I believe, in 2017. I would have to -- that's something we can take away, to find out exactly when that document was finalized.

KATE MCGRANN: And to your knowledge, was that -- what led to that document being created? Let me ask you that.

RICHARD HOLDER: It was in the summer of 2017, so roughly a year away from the first scheduled date of revenue service availability, when Sean Derry, a systems engineer, was brought in by SNC-Lavalin to head up the systems engineering safety assurance team within OLRTC as they started

to plan for the handover and completion of the project.

As part of his engagement, he developed a suite of documents that were very much in line with the requirements of CENELEC in terms of systems assurance, so there were literally hundreds of documents that needed to be created to support the safety case that was needed at substantial completion and revenue service availability.

The majority of those documents were to be created by OLRTC and RTM on the design build side. There were a few documents, though, that needed to be created by the City, and one of those documents was the concept of operations. So once that path towards the safety case was developed, that's when the City started working on the concept of operations document.

KATE MCGRANN: Was it the case that before Sean Derry began his work, the City was unaware that a concept of operations would be required?

RICHARD HOLDER: That's correct.

KATE MCGRANN: And what's the purpose of that document?

RICHARD HOLDER: The concept of

operations document describes in broad terms how the system will operate. It starts with a description of the actual system, the geography of the system, the number of stations, the type of vehicles that are going to be used, the overall mechanism of operations and maintenance, but it also describes the expectation of how, on a day-to-day basis, the system will operate. The launching of the vehicles from the yard into the line, the launch sequence of the trains, the placing of the trains on the track in time for start of service, the broad approach to dealing with degraded modes of operation, when a vehicle breaks down, if there's a fire, if there's a breakdown in a TPSS, it describes those degraded modes, it describes how vehicles are brought back to the yard, it talks about the overall concept for operational performance in terms of the number of operators, the training that's required, the same for the controllers. So it's a document that, at a high level, helps to explain from an operations perspective how the system's going to operate.

KATE MCGRANN: With the benefit of hindsight, would it have been beneficial to the project overall if the concept of operations had

been developed earlier than it was?

RICHARD HOLDER: I could be persuaded that it would have been beneficial, but I have not seen examples brought forward where the lack of that document caused issues with the development of the design. So I agree that the concept of operations document we now know is a document that helps design -- helps guide the design process, but the absence of the document does not necessarily indicate an absence of guidance.

So the guidance, I believe, was provided by the heavy engagement of the operational staff from the beginning of the project; however, I can't speak to the first 2 years of the design because I was not engaged in that part of the development of the LRT design. But as I -- you know, as I became involved in the project, from 2015 onwards, I can't think of a time when somebody said, I wish we had a concept of operations document.

KATE MCGRANN: Okay. So it's one way of guiding the design, but another approach was taken prior to the development of the concept of operations, and you don't see any repercussions from the timing of the concept of operations

development?

RICHARD HOLDER: Not that I can think of now.

KATE MCGRANN: Shifting focus to the first application for substantial completion and then the ultimate achievement of substantial completion, can you speak to how RTG met the City's objections to its first application? And I think my real question here is were there any objections made to the first application that existed -- still existed when the second application was made?

RICHARD HOLDER: To be certain of my response, I would need to look at the two versions. I can say that at the time that the first substantial completion certificate was presented, there was a high degree of dissatisfaction from the City's team upon receiving the certificate because it was really widely felt that the system in no way could be considered to be substantially complete and was ready to move into trial running.

In terms of the project agreement, the City has to provide an opinion, I believe, within 5 days of whether we agreed, and if we did not agree, why didn't we agree, and so there was a huge effort on the part of the City to document and list

all the reasons, all the valid reasons why, in the City's opinion, RTG had not met the requirements of substantial completion, and it was understood that the information that we were providing had to be extremely accurate because of the contractual context of their submission of substantial completion.

So the information that we provided back to RTG then became similar to a work list - call it a burn-down list - and RTG and OLRTC used that list as their work program for the next few months to eliminate each one of our objections or each one of the items that we had recorded that indicated they were not ready. So it was very much used as a work programming tool by OLRTC, and that's the impression and the opinion of myself and the City team. I would say that I do not know that for a fact because OLRTC was managing their work, but that was certainly the impression that the City team had.

KATE MCGRANN: I should have asked you this before: What was your involvement in assessing or analyzing the first certificate that was provided in terms of whether it met the requirements of the PA?

RICHARD HOLDER: At that time in the project, there was the accountability for different elements of the project were split between myself - I was looking after vehicles and systems, safety and security, and operational and maintenance readiness - and then Gary Craig, the other manager, was responsible for the track, for the guideway, for structures, for facilities, and for the MSF readiness. So each of us had the responsibility of reviewing that document, breaking it into those two components, and then we each independently reviewed the assertion provided by RTG and then came up with our own opinions, backed by documentation and evidence, that refuted that position that substantial completion had been achieved.

KATE MCGRANN: So RTG and OLRTC took the list away, and to your recollection, were they able to address all of the items that you were responsible for? Had all of those been addressed when the second application was made, the second certificate was presented?

RICHARD HOLDER: That's what I would have to check to be completely clear about my answer. I believe that they were all addressed, but I would have to check.

KATE MCGRANN: Okay. And --

RICHARD HOLDER: In other words --

KATE MCGRANN: Sorry, go ahead.

RICHARD HOLDER: There was -- it was clear at that time that we had -- that there were deficiencies, and it was necessary to split those deficiencies into the minor deficiencies, which were allowed under the project agreement -- and there was no defined term for a major deficiency, but it was all those other issues that were still outstanding that meant that substantial completion had not been achieved. We described them as major issues, and it was all the major issues that were listed in the document.

KATE MCGRANN: To your recollection, were any issues that were originally identified as not minor - therefore major - that were ultimately accepted as minor when the second substantial completion certificate was presented?

RICHARD HOLDER: I don't recall. I would need to go and check that.

KATE MCGRANN: And when --

RICHARD HOLDER: It's -- I mean, as I recall some of the issues, the issue that I described before around the platform edge cameras,

that was considered to be a major issue, and to the best of my recollection now, I don't think that was addressed at substantial completion, but there was a decision made, an agreement reached that a mitigation could be put in place whilst that issue was resolved. And I believe that was part of -- part of the purpose of the term sheet, to agree those -- those issues that had not been fully resolved that had originally been considered as a major item but subsequently were considered -- well, they were still considered major but could be mitigated in some form or other. But I would have to refer to the various documents. The term sheet would be one document, and the operational restrictions document would also be another key document.

PETER WARDLE: So, Ms. McGrann, the witness has said a couple of times that he'd need to check. Just because we've had this issue before, I need to know if you want him to check or not. If you do, we will do it.

KATE MCGRANN: Thank you, Peter, and yes, please.

PETER WARDLE: Thank you. So he will check about his answer about he believes that all

of the major issues were addressed before substantial completion and also with respect to his last answer about the term sheet. So we'll make those inquiries.

KATE MCGRANN: Okay. And just so that we know we're all talking about the same thing, where major issues were addressed, could you please identify how they were addressed, whether they were fully resolved, addressed by way of the term sheet, addressed by way of the operational restrictions document, or in another way that I'm unaware of.

PETER WARDLE: That's fine. Thank you.

KATE MCGRANN: The Integrated Management Infrastructure Reporting System, IMIRS, was anybody asked to do a review of that system prior to the opening of revenue service on behalf of the City?

RICHARD HOLDER: I would have to check with OC Transpo to understand if they brought in any specialist staff to undertake a review of the IMIRS system.

KATE MCGRANN: Okay. My understanding is that Deloitte was asked to do a review of that system. Do you have any awareness of that work?

RICHARD HOLDER: I am aware of the work

that Deloitte did. I'm just not sure of when that review started.

KATE MCGRANN: Do you know what the purpose of that review was?

RICHARD HOLDER: I was not involved in the writing of the terms of reference for that assignment. I understand that one of the roles of Deloitte was to determine if the IMIRS program was providing accurate information that was to be used for the purpose of making payments to RTM by the City.

KATE MCGRANN: Who would be the best person at the City to talk to about the nature of that review, its purpose, and the outcome?

RICHARD HOLDER: Troy Charter. He was the director of operations at the time, and he may not have been engaged on a day-to-day basis with that Deloitte assignment, but he would recall who it was who was project managing that Deloitte assignment. There was -- there was a contracts manager working with OC Transpo at the time called Vivian Kaye who was certainly involved at that time, but Troy Charter would have the information about the overall drafting of the terms of reference and the overall kind of management of

that assignment.

KATE MCGRANN: With respect to the use of IMIRS and the help desk and all of those systems through which OC Transpo and RTM would be interacting during operations, were there any steps taken to try to optimize how that system would be used to place everybody in the best possible position for when revenue service started?

RICHARD HOLDER: Yeah, I think the teams, both teams, were working hard to try and optimize that system. There was a challenge with the lateness of the delivery of the overall IMIRS system, and there was a limited amount of time for the teams to undertake that optimization.

KATE MCGRANN: And what were the implications of the limited amount of time that was available for the optimization work that we're talking about?

RICHARD HOLDER: I think there were -- there were two issues that occurred with the IMIRS program. One issue was the -- just the initial understanding of how the system would function. There was -- and part of that was around the number of assets that needed to be included as data points within that system. In my recollection, the number

was in the 15 to 20,000 element range. So there was a volume of data that created a challenge to just the understanding of the normal functioning of the system.

The additional challenge that presented itself was in relation to the work orders that were created as we went through trial running -- well, prior to trial running, as we went through trial running, and then in the early few weeks of operations. So there were many, many work orders that were generated that were related to defective items, broken down cameras, some sort of deficiency, some sort of maintenance activity that needed to be undertaken. So as well as the -- so there were these two issues that were compounded at the time of revenue service availability and for the first few weeks. So there was the overall understanding and functioning of the base system in addition to the compounding with additional flow of data because of the number of deficiencies that were present.

KATE MCGRANN: Okay. So can you help me understand what the first challenge, the volume of data and the number of items and things, how did that look on the ground for the people who were

working with the system? How did that challenge express itself?

RICHARD HOLDER: The challenge was for the personnel to actually input the data, to build up the IMIRS system from a base software system, which maybe functions, but it's got no data in, and it's only useful when you complete putting the data in. So just the inputting of the base information took many, many months, and then it was -- so the fact that the system was really only functioning, I believe, in the early parts of 2019, then there was a challenge for the teams to get that information into the IMIRS program. And then -- and once the base -- the baseline had been established, there was then a challenge for it to create reports that could be used for the purpose of payment, of managing the maintenance contract. So the number of vehicle -- the number of kilometres driven by a vehicle: A very simple statistic, but it took quite some time, and I know that that was one of the focusses of the Deloitte report was how many revenue kilometres are achieved on a daily basis. It's a -- which is a combination of a basic geometry issue in terms of how long are the tracks, but it's also an issue of, well, how many trains

are running and when are those trains carrying passengers, because sometimes the trains are running and they're not carrying passengers. So all that compounded to one single kind of data point, but it -- that in itself created a lot of work just to create the baseline.

KATE MCGRANN: Okay. And was it the case that that particular challenge was resolved by the time the system went into revenue service?

RICHARD HOLDER: That particular challenge was resolved during -- during trial running. So there was some concern over the data that was being used as part of the trial running scorecard, and it's my recollection that Deloitte were able to make a confirmation about that, the planned number of kilometres that needed to be achieved on a daily basis and the actual number of kilometres that were achieved on a daily basis. But that was resolved during trial running.

KATE MCGRANN: And then can you walk me through in a bit more detail the work order challenge.

RICHARD HOLDER: I think with the work orders, the challenge was more related to the volume of work orders that were in the system that

needed to be responded to by RTM. So that wasn't necessarily creating the baseline. It was -- it was, again, responding to the volume of work orders on the part of RTM.

KATE MCGRANN: Were there any questions or issues or concerns expressed about the manner in which work orders were being generated in the system?

RICHARD HOLDER: At the time of trial running, there were concerns expressed in terms of the accuracy of the information, and that was a concern both on the way that information was inputted into the database on the OC side and then also how that information was further analyzed on RTM's side.

KATE MCGRANN: Okay. So --

RICHARD HOLDER: And to focus on one of the issues that was certainly raised during trial running was the issue of the closure of work orders. So there were certain questions from the City's side as to what did closure of a work order mean for RTM. RTM would indicate that a work order was closed if they had asked one of their maintenance teams to address that particular deficiency. It was not necessarily based on that

team actually rectifying the defective piece of equipment. And so there was -- there were those kind of debates that were occurring during trial running.

KATE MCGRANN: Okay. So it sounds like these issues kind of have a natural progression: There's the entry, there's the response, and then the closing, and so I'm going to ask you to take me through each step. So first of all, with respect to the concerns expressed about the accuracy of the information that's being input, who was expressing that concern?

RICHARD HOLDER: Tom Pate from RTM.

KATE MCGRANN: And what was the nature of the concern that was expressed? I understand that it was the information was inaccurate, but what are the implications of that?

RICHARD HOLDER: The implication was that it was necessary for the help desk operators on the RTM side to follow up with a phone call or with a conversation to the help desk staff on the OC side to gain clarity on what the entry that's on the computer screen, what that actually meant. So it was a communication issue, that there was -- information was provided in writing, but it was

sometimes necessary to have a verbal follow-up to validate the understanding of that information. So that just added extra time to the overall process.

KATE MCGRANN: And the addition of extra time, to your knowledge, was that creating concerns that the response time was longer than it ought to be? The response time would have repercussions for RTM? Was there -- what was the follow-up from the additional communication required?

RICHARD HOLDER: So the follow-up time meant that not so many issues per day could be dealt with as would normally be expected because of these extra clarifications that were required.

KATE MCGRANN: And was this communication issue -- what progress was made in resolving it by the time of the launch of revenue service?

RICHARD HOLDER: As people, both on the OC side and on the RTM side, became more familiar with the system, became more expert at using the system and inputting the data and doing the analysis, then there was overall improvement in the flow of documentation and the ability to deal with the work orders.

KATE MCGRANN: And was -- and in terms of the extent that this issue was resolved by the time public service was launched, was this something that was in progress? Was it something that had been completely resolved?

RICHARD HOLDER: I think it was something that was still in progress.

KATE MCGRANN: And then I think that you said that there was also -- there was also a concern or a challenge in terms of how the information is being received or interpreted on the RTM side. Have I got that right?

RICHARD HOLDER: Yes.

KATE MCGRANN: Okay. Could you explain what that looked like.

RICHARD HOLDER: So as reported to me, the impact was a work order would be -- as I mentioned, a work order would be considered to be closed because a request had gone to a maintenance team to undertake that maintenance work or that repair work when in fact that did not necessarily indicate that the issue itself had been rectified.

So there was a -- there became an issue around the same device - as an example, a camera, CCTV camera that wasn't working. It would be

reported one day, and it would go through the system and then there would be an IMIRS indication saying that that issue had been closed, and then next day the camera's not working. So a new work order would be created. And then that would be indicated as closed, and then the third day the same camera's not working, and this issue floating around, going backwards and forwards in the IMIRS system when, in fact, from the perspective of the maintenance team, actually making it a priority, go and fix that camera, that had not occurred on the RTM side. So this was a challenge for the teams managing the list of items that were outstanding to be worked on because there was a lack of confidence that the list was accurate.

KATE MCGRANN: And what steps were taken to address that issue?

RICHARD HOLDER: Well, it was eventually agreed that a work order would only consider to be closed once the actual work itself had been undertaken and could be confirmed to have been undertaken and rectified.

KATE MCGRANN: What was the source of the issue here? Was there uncertainty in the requirements that were drafted? Differences of

interpretation of when a work order could be listed as closed? Like, how did this challenge arise?

RICHARD HOLDER: I'm not sure of all the reasons for why this challenge was in place. I would say that the short familiarity period that the teams had to work with the IMIRS system presented challenges from an on-the-job training perspective. So my understanding is that the training of the operators on the RTM side took place in around March or was completed by March 2019, which was just a few months before we got into substantial completion. And so that left little time, really, for those operators to get fully conversant with the system.

KATE MCGRANN: Okay. And when was the closing of the work order issue resolved by way of agreement, as you described?

RICHARD HOLDER: I believe that was sometime during the trial running period, but I would have to check.

KATE MCGRANN: Okay. And --

RICHARD HOLDER: Do you want me to check?

KATE MCGRANN: I was going to say let me ask you this question to see if I can avoid

asking you to check, but if the answer is you have to check, then I will ask you to do so. To your knowledge, was it resolved prior to the launch of revenue service?

RICHARD HOLDER: I would like to check before I answer that.

KATE MCGRANN: Okay. Then please do that, and thanks for that. Any other issues coming out of the -- this is a place in which OC Transpo and RTM are interacting regularly through revenue service, so were there any other issues that you were aware of on that interface that were -- that presented themselves at any point prior to revenue service?

RICHARD HOLDER: I recall there being discussions around the readiness of vehicles that were provided at the launch of service. The interaction between RTM and OC was such that RTM's responsibility was to have a vehicle prepared and to bring that vehicle to a launch platform where it would be handed over to OC Transpo, to an OC Transpo operator. There would be a checklist on the vehicle to indicate that a certain number of minimum vehicle functionalities had been listed and checked, and then at that point the operator would

take that vehicle and would move onto the line.

And I believe that, you know, up to trial running and during trial running, there were certain issues around the actual readiness of a vehicle where the documentation may not have accurately reflected the actual functioning of that vehicle. So that was -- I mean, in terms of questions as to other things that were coming up in that interaction, then that would be one item that I was aware of.

KATE MCGRANN: And can you think of any others?

RICHARD HOLDER: Not that I can think of right now.

KATE MCGRANN: Okay. In terms of the issue that you did identify where, at the morning handover, the documentation didn't actually reflect the state of the vehicle or the status of the vehicle, was it one particular disconnect between what the document said and where the vehicles were at that you were seeing repeatedly, or was it a variety of disconnects?

RICHARD HOLDER: I don't know the details of what particular checkmark was considered to be inaccurate. It was more -- I was aware from

a process perspective that that handover was not always -- was not always clean.

KATE MCGRANN: And were these handover issues resolved by the end of trial running?

RICHARD HOLDER: That's something I would have to check.

KATE MCGRANN: Okay. Would you please check that as well.

RICHARD HOLDER: Okay.

KATE MCGRANN: In terms of the concept that the system might open with -- open to public service with less than full service as envisioned in the project agreement - something that I will use the shorthand of "soft start" to describe - can you speak to me about what you know about whether that was ever raised by anybody as something the City ought to consider and what followed.

RICHARD HOLDER: I think there had been discussions for several years around exactly how many vehicles needed to be on the line on Day 1 of revenue service availability. There had been discussions around the possibility of having some routes of buses dropping passengers at the terminus stations but other buses bypassing the terminus stations and just driving through the city centre.

That could have been considered a soft start, but that was an example.

I'm sure that there were other examples that were considered of soft starts. Most of them were ruled out. The -- it was always known that the system would be a high-capacity system from Day 1, and that made the launch of the Confederation Line unique in comparison to the launch of other systems around the world, and that was on the basis that this was the first conversion of a bus rapid transit system to a light rail system. We already had the passengers, we already had the demand, and we were replacing one mode of transport for another mode of transport, but we were not replacing passengers. So it was always the expectation that on Day 1 we would be carrying 9 to 12,000 passengers.

In the end, you know, what actually occurred was the -- we were able to launch with a reduced number of vehicles than what was anticipated in the project agreement, so that could be considered almost like a soft launch. Instead of making the demand from RTG that we need to have the 15 vehicles available for peak running from Day 1, we were able to reduce that number. The fact

that we had parallel bus service for several weeks could also be considered to be a soft launch because we were at least able to quickly respond to any issues that occurred because we had the backup of a full parallel bus system. So that could be considered as a somewhat soft launch, but there were -- there were also discussions around opening up part of the system.

So another -- for instance, the Rideau -- Rideau Station was -- the completion of the Rideau Station was on the critical path. As well as being the largest and most complex and deepest station within the system, it also has a relatively sophisticated tunnel ventilation system as well that was on the critical path. So there was a discussion or a contemplation of, well, maybe -- can we open the system without Rideau Station? Do we just run the line -- we stop at all the stations, but we don't stop at Rideau? But that was ruled out on the basis that Rideau Station is such a key transfer point, and just the friction that it creates in the system to have just one of the 12 stations not operating and the need then to provide backup bus service to support those people at Rideau Station, it was ruled out as an option,

but it was considered. So that would be an example of not having the whole line open.

The other example would be just to have the line open, say, to -- from Blair to Pimisi or Blair to Bayview, but that was also felt to not really have any advantage in the end. There was no advantage to the City in terms of being able to open the system earlier, as far as I can recall, and only really just provided a degraded service.

So some of those options that were contemplated were not brought forward as an option to be considered for Day 1 service. So really the two that were carried forward was the reduction in the number of vehicles and the provision of a parallel bus service.

KATE MCGRANN: At any point following substantial completion, was there any consideration given to creating additional time for a burn-in period for the system beyond what was set out for trial running?

RICHARD HOLDER: My recollection of a discussion around burn-in was associated with the Alstom vehicles. There was no project agreement requirement for a specific burn-in agreement, but in discussions with RTG and OLRTC and Alstom and

our subject matter vehicle experts on the City side, it was agreed that a burn-in period -- and I believe we settled on 4,000 kilometres, a burn-in period of 4,000 kilometres would be reasonable for a vehicle. Once it had completed all the required serial testing and had a -- and had the 4,000-kilometre burn-in period, then that was a vehicle that could be ready for revenue service availability.

So the burn-in period -- a discussion around burn-in period was associated with the vehicles only, in my recollection. I don't recall there being a discussion around a burn-in period for the whole system, including, you know, all the stations, all the communications systems. It was purely around the vehicles.

KATE MCGRANN: And the number of kilometres run, did -- was there any consideration given to the need to run the kilometres over the entire system, or would running the kilometres over a portion of the system count as well?

RICHARD HOLDER: Kilometres that were run over the partial system were considered to be valid. It did not necessarily have to be a vehicle running from one end of the system to the other end

of the system to accumulate the 4,000 kilometres.

KATE MCGRANN: I don't need the day, but around what time was the agreement reached with respect to the 4,000-kilometre burn-in period for the vehicles?

RICHARD HOLDER: I would have to go and check even the period. I would say that it was a number of years prior to substantial completion. We -- the City tracked the progress or the progression of the readiness of the vehicles on a vehicle-by-vehicle basis, so from the assembly, from the serial testing, from the acceptance of the vehicle, from the accumulation of the required burn-in kilometres, they were tracked vehicle by vehicle, and that was -- so that would -- I'm anticipating that would have been from 2017, but I would have to go and check some of our tracking sheets to see when we actually started recording those 4,000-kilometre kind of checkmarks.

KATE MCGRANN: Okay.

RICHARD HOLDER: Would you like me to do that?

KATE MCGRANN: Yes, please.

RICHARD HOLDER: Okay.

KATE MCGRANN: To your recollection,

had all of the vehicles met that burn-in period by the time substantial completion was achieved? Was that part of the requirement to achieve substantial completion?

RICHARD HOLDER: That was my recollection, that they had all achieved that, yes.

KATE MCGRANN: At any point following substantial completion, did anybody working for the City, either a member of staff or an advisor, raise the possibility of a further burn-in period for the vehicles or for the system overall?

RICHARD HOLDER: After substantial completion, I don't recall that that was raised in the meetings that I attended.

KATE MCGRANN: Did you -- outside of the meetings that you attended, did you ever learn that a suggestion like that had been made to the City?

RICHARD HOLDER: A suggestion to increase the burn-in period? Not that I recall.

KATE MCGRANN: Okay. And during the period of time between the project agreement revenue service availability date and the time that substantial completion is achieved, so stepping back a chunk of time, during that time, do you

recall any discussions about a further burn-in period for the vehicles or the system overall?

RICHARD HOLDER: Sorry. Can you restate that period?

KATE MCGRANN: Yes. From the date that the project agreement provided for revenue service availability, so --

RICHARD HOLDER: Mid 2018.

KATE MCGRANN: -- May 2018, up until when substantial completion is achieved, anybody suggesting to the City that a further burn-in period for the vehicles or for the system overall should be contemplated?

RICHARD HOLDER: Not that I recall.

KATE MCGRANN: Okay. Mr. Coombes, any follow-up questions on any of that?

MARK COOMBES: No, I don't have any follow-up questions.

KATE MCGRANN: Can you explain how you -- I'm not sure that you transitioned out of your role, but can you explain how you left the project and whether anybody stepped in to take your place.

RICHARD HOLDER: Are you talking about within the last couple of weeks?

KATE MCGRANN: I'm talking about -- so how did your -- let me ask you it this way: Did your role change at all once the system went into revenue service?

RICHARD HOLDER: I continued to work with the O-Train construction office on the delivery of Stage 1 for several months at a 100 percent level, probably until the end of 2019. I would have been engaged in the closing out of minor deficiencies. I was engaged in supporting the City's response to claims and disputes from RTG. I would have provided support to OC Transpo on dealing with some of the operating restrictions, and then from -- starting in December and into January, I started to transition over into the rail construction program office that was involved in the design and construction of Stage 2.

KATE MCGRANN: And as you started to -- sorry, go ahead.

RICHARD HOLDER: And I've -- my -- the percentage of my time allocated to the two projects has gone from being 90 percent Stage 1, 10 percent Stage 2 in December 2019 to being 95 percent Stage 2 and 5 percent Stage 1 as of -- you know, as of last week.

KATE MCGRANN: Can you speak to the progress of the closing out of the minor deficiencies and any significant challenges encountered after the start of revenue service.

RICHARD HOLDER: It has taken many, many more months to address the minor deficiencies than I think anybody would have contemplated at the start of the -- at the start of the project or even at revenue service availability. There have been challenges dealing with some of the systems-related deficiencies, particularly related to the train control system, because any changes have an impact on operations, potentially require shutdowns of the system or can only occur during the evening and weekend maintenance periods so that there have been challenges on -- on OLRTC's side to deal with some of the deficiencies because we now have a fully functional transit system.

There are a number of systems that have continued to prove to be unreliable. For example, the guideway intrusion detection system has not been reliable, and that has impacted operations, both from an availability perspective but it has also had implications on the reliability of the trains because of the number of emergency brakes

that have been initiated by those guideway intrusion detection systems. I would say that there are -- there are several -- there are several system issues that are still having an impact on the reliability of the system that still need to be addressed.

KATE MCGRANN: Other than the guideway intrusion detection system, what are the other system issues that are having an availability/reliability effect?

RICHARD HOLDER: There are -- there were issues with the traction power substation grounding systems tripping out, and that was related to the grounding of the rails. That has been an issue that OLRTC has been -- well, was working on. It -- there was a feeling that that's been resolved at this point, but for the first 12 months of operations, that was a concern, so the grounding and bonding of the system.

There were issues around the reliability of the overhead catenary system, both in its -- the system setup but also in the design in relation to particular elements of the OCS system, and what I'm referring to is the parafil rods that provide part of the support mechanism.

They have proved to be unreliable and have impacted reliability and availability of the system. And then there are a number of issues with the vehicles itself. So there's the systems generally and then there are still reliability issues with the vehicles.

KATE MCGRANN: The parafil rods, is that an ongoing issue?

RICHARD HOLDER: It is -- there is still concern around the reliability of the parafil rods, yes.

KATE MCGRANN: And is the concern based on recent issues that have been experienced or a general concern from the beginning of the system's operations?

RICHARD HOLDER: There was general concern at the start of operations. There were a number of failures of those rods that occurred I think in the first winter. There was a rectification program implemented by RTM, but there have been more recent reliability issues with some of those rods. So it's not an issue that is closed.

KATE MCGRANN: Okay. And then the issues with the vehicle itself that remain a

concern, that continue to present issues, what are those?

RICHARD HOLDER: Would you like the issues as of now or within the first 12 months of operations?

KATE MCGRANN: Let's start with in the first 12 months.

RICHARD HOLDER: There were issues with the door closure mechanism. There were issues with the heating system for the cab. There were issue with the compressor unit on the top of the vehicle. There's -- there is a systemwide issue related to the calibration of the acceleration and braking rates and the integration of that data between the vehicles and the Thales system. There are -- there is an issue with a number of rectifiers on the vehicle.

KATE MCGRANN: And sorry, what is that?

RICHARD HOLDER: It's a piece of equipment on the vehicle that converts the current of an electrical -- it converts an electrical current from supply to a piece of equipment. We have the outstanding issues with the CCTV views within the cab. And I believe there are more.

KATE MCGRANN: If, when you review your

transcript, you become aware or recall more issues, if you could provide those to us when you think of them, that would be useful.

RICHARD HOLDER: I can do that, yes.

KATE MCGRANN: Okay. And then in terms of the issues that exist as of today or recently?

RICHARD HOLDER: I believe there is still an issue related to compressors, and we still have the camera issue which is not fully resolved. And I expect that there are other issues. I would have to go away and get that information, and I can provide that in my transcript as an amendment to the transcript.

KATE MCGRANN: If you could do that, thank you.

Mr. Coombes, any final follow-up questions before I ask what I think will be my last two questions?

MARK COOMBES: None from me.

KATE MCGRANN: The Commission has been asked to look at the technical and commercial circumstances that led to the breakdowns and derailments on Stage 1. Other than the topics and areas that we've discussed over the 2 days of your interview, are there any other areas that you would

suggest the Commission look at as part of its investigation?

RICHARD HOLDER: I would like to -- I'm not sure whether I'm answering your question, but I would like to add that as a lessons learned, it is useful to think about the form of the contract that all parties entered into back in 2012, 2013, the P3 model. It's my understanding that the model that was used was very much based on an Infrastructure Ontario model that had been used successfully on several other multimillion dollar projects, but they were exclusively vertical projects - so facilities, hospitals, buildings, that kind of project. This was one of the first projects -- well, it was the first project to be used where this model was used for a light rail system. I believe that a P3 system had been used on a highway project a few years earlier, but this was a first for a light rail system.

There are a number of base assumptions in the approach that has been applied through that P3 model, certainly the assumption that there is huge commercial pressure on the builder and on the maintainer to follow all best industry practices in order to achieve the best project over a 30-year

period. That feels like an assumption that has not necessarily been borne out by the first couple of years of operations of the system. The commercial pressure that exists on the maintainer does not seem to have been sufficient for them to reach best industry practices in the maintenance of the system.

The other consideration around the P3 model is that the agency that is providing oversight for the design and the build and, to some extent, the operations can take a somewhat hands-off approach because the private sector is commercially driven to follow all best industry practices in the achievement of their work, and there is not the need for the usual oversight of an agency or an owner when managing that type of P3 contract.

So for instance, on a regular engineer procure construct project, there would be a much higher level of oversight for the work that is being undertaken in the field. Because it was a P3 model, the number of resources within the light rail office on the agency side was quite small in comparison to what could have been expected on an engineer procure construct project, and the

implications of that, I think, are that there was a substantial amount of work in the field that had to be redone by the contractor because issues were not caught first time, not even caught second time, whereas with a higher level of agency oversight, there is more likelihood or work getting done the right way the first time.

And I can think of numerous examples that would support that and that would support the position that the delays that occurred during construction could potentially have been avoided by a slightly different structuring of the relationship and a restructuring of the oversight on the City side. But that was a construct of the -- that was a construct of the model that all parties had signed off on.

KATE MCGRANN: And because of the time, would you provide those examples to us by way of undertaking? We're already -- just because we're already 2 minutes past the end time and I don't want to keep you here for longer. And it may be that you have already answered my last question for you, which is the Commissioner is also asked to make recommendations to try to avoid these issues happening in the future. Are there any specific

recommendations or areas of recommendations other than what we have already discussed that you would suggest be considered as part of that work?

RICHARD HOLDER: I would make a recommendation that the maintenance preparedness of a DB Co/Proj Co team be given more consideration within the project agreement documentation, and I would -- so that would include increased criteria for demonstration of maintenance readiness at the time of substantial completion but also an increase in the language and the specificity within the PSOS, the project-specific output specifications.

KATE MCGRANN: Anything else?

RICHARD HOLDER: That's all for now.

KATE MCGRANN: Okay. We can go off the record.

-- Concluded at 12:04 p.m.

REPORTER'S CERTIFICATE

I, JOANNE A. LAWRENCE, Registered Professional Reporter, certify;

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

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

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

Dated this 19th day of May, 2022.

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PER: JOANNE LAWRENCE, RPR, CSR
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