

Canadian Nuclear
Safety Commission

Commission canadienne de
sûreté nucléaire

Public hearing

Audience publique

June 29th, 2018

Le 29 juin 2018

Pickering Recreation Complex
1867 Valley Farm Road
Pickering, Ontario

Complexe récréatif de Pickering
1867, rue Valley Farm
Pickering (Ontario)

Commission Members present

Commissaires présents

D . Michael Binde
Ms Rumina Velshi
D . Sando Demete
Ms Kathy Penney
M . Timothy Beube
D . Marcel Lacoux

M. Michael Binde
M^{me} Rumina Velshi
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Secretary:

Secrétaire:

M . Marc Leblanc

M. Marc Leblanc

Senior Counsel:

Avocat principal :

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Pickering, Ontario / Pickering (Ontario)

--- Upon commencing the public hearing on Friday,
June 29, 2018 at 8:30 a.m. / L'audience publique
début le vendredi 29 juin 2018 à 8 h 30

Opening Remarks

M. LEBLANC : Bonjour, Mesdames et Messieurs. Good morning. Welcome to the continuation of the Part 2 public hearing on the application by Ontario Power Generation for the renewal of the Nuclear Power Reactor Operating Licence for the Pickering Nuclear Generating Station.

Please note that we have emergency exits at the back of the room and also that bathrooms are located near the entrance in the main lobby as well as on the side wall here in the building.

During today's business, we have simultaneous interpretation.

Des appareils d'interprétation sont disponibles à la réception. La version française est au poste 2 and the English version is on channel 1.

Please keep the pace of your speech relatively slow so that the interpreters have a chance to keep up.

I would also like to note that this hearing is being video webcast live and that the hearing is also archived on our website for a three-month period after the close of the hearing.

Transcripts will be available on the CNSC's website in about two weeks, and to make those transcripts as meaningful as possible, we would ask everyone to identify themselves before speaking.

As a courtesy to others in the room, please silence your cell phones and other electronic devices.

Monsieur Binder, président et premier dirigeant de la CCSN, présidera l'audience publique d'aujourd'hui.

Mr. President...?

LE PRÉSIDENT : Merci, Marc.

Good morning and welcome to the continuation of the public hearing of the Canadian Nuclear Safety Commission. And welcome also to all of you joining us via webcast and teleconference.

Mon nom est Michael Binder, je suis le président de la Commission canadienne de sûreté nucléaire.

I would like to start by introducing the Members of the Commission.

To my right are Dr. Sandor Demeter and

Ms Kathy Penney; to my left are Mr. Timothy Berube, Ms Rumina Velshi and Dr. Marcel Lacroix.

We heard from the Secretary Marc Leblanc. We also have with us Monsieur Denis Saumure, Senior Counsel to the Commission.

Marc...?

MR. LEBLANC: Thank you.

This is the last day of the hearing. We have heard so far the presentations from OPG, CNSC and 52 oral presentations, and we have also addressed all the written submissions.

Three intervenors are scheduled to present orally today. Ten minutes are allocated for the presentation, with the Commission Members having the opportunity to ask questions after each presentation.

To help you in managing the time, a timer system is being used. The light will turn yellow when there is one minute left and turn red at the 10-minute mark.

We also have received a request for ruling yesterday from Greenpeace. The Commission will duly consider this request as part of its deliberations on this matter.

We have in attendance, available for questions from the Commission, representatives from

Environment and Climate Change Canada; Fisheries and Oceans Canada; the Ontario Ministry of Natural Resources and Forestry; the Ontario Ministry of the Environment and Climate Change. Some will be in the room, some will be available by teleconference.

Your key contact persons, as was the case all week, are Ms Louise Levert and Ms Johanne Villeneuve who are in the back of the room.

The break for lunch is anticipated to be around 12:30. There will also be short breaks in mid-morning and in the afternoon.

How the day will unfold is that we will proceed with the three remaining interventions this morning, and then once we have completed the interventions, the Commission will proceed with general rounds of questions to OPG and CNSC staff.

Mr. President...?

THE PRESIDENT: Thank you, Marc.

So let's start with the presentation by Swim Drink Fish / Lake Ontario Waterkeeper, as outlined in CMDs 18-H6.58 and 18-H6.58A.

I understand that Ms Feinstein will make the presentation. Please proceed.

CMD 18-H6.58/18-H6.58A

Oral presentation by

Swim Drink Fish / Lake Ontario Waterkeeper

MS FEINSTEIN: Good morning, President Binder and Commission Members. Thank you for the opportunity to address you all today, especially at the end of this very intense and demanding week of hearings.

For the record, my name is Pippa Feinstein and I am representing Swim Drink Fish Canada / Lake Ontario Waterkeeper, which has been granted intervenor status in this hearing concerning the Pickering Nuclear Generating Station's licence renewal application.

Waterkeeper is a non-political registered charity that uses research, education and legal tools to protect and restore the public's right to swim, drink and fish in Lake Ontario. It has been involved in decision-making processes for the Pickering Nuclear Generating Station and Pickering Waste Management Facility for a number of years and has developed considerable expertise concerning the site's adverse impacts on local lake water quality and aquatic ecosystems.

Waterkeeper was provided with participant funding to examine three things: the adequacy of public information disclosure by OPG; the impacts of the station

on local aquatic species and habitat; and the impacts on the station's effluent and other liquid releases to local groundwater and surface water.

I will summarize some of our findings and recommendations for you in my presentation, but due to limited time I hope to be able to discuss these and other aspects of our written intervention in more depth during the question period for this intervention.

First and foremost, Waterkeeper opposes the 10-year licence renewal for the Pickering Nuclear Generating Station at this time. There is insufficient information on the public record in this matter to demonstrate that the station could operate without significant impacts on the environment and what little information our organization has found on the public record seems to indicate that there may be significant impacts and a lack of regulatory oversight to ensure the facility's compliance with relevant environmental law. As such, Waterkeeper recommends a temporary interim licence of no longer than two years, over which time OPG, CNSC staff and other regulators should collect and disseminate information that can demonstrate the facility's ability to make adequate provision for the protection of the environment. Such a decision would be consistent with the precautionary approach which is affirmed and codified in Canadian law as

well as international legal instruments to which Canada is a signatory.

OPG and CNSC presented to the Commission this past Monday, indicating that there were three robust avenues by which members of the public could obtain information concerning the Nuclear Generating Station. The first was through questions and information requests during licence hearings; the second was via formal access to information processes; and the third was via OPG's websites. I would submit that each of these avenues is currently insufficient and I will explain why.

In terms of information requests pursuant to the licence renewal hearing, our written submissions can attest to OPG's obfuscation and CNSC staff's refusal to assist us in this process. We were almost unable to fulfil our obligations under our funding agreement after being denied crucial information we required for our review, including groundwater monitoring reports, maps showing liquid discharge lines from the station, as well as documentation for events in which the fish diversion system would have failed or in which cooling water temperatures spiked. None of this information was provided, nor were any reasons provided for the refusals, despite the fact that OPG is required to provide annual impingement and entrainment reports, as well as groundwater monitoring

reports to the CNSC on a regular basis and the requested sampling data would have already been completed and stored at the facility, so I would have expected these types of things to be provided to us in a timely manner.

The issue of insufficient disclosure at public hearings is not a new one. The Commissioners recommended that OPG disclose more monitoring data in your last PNGS licensing decision back in 2013 as well as your more recent Pickering Waste Management Facility relicensing decision last year. In both of those decisions you required OPG to release more monitoring data and also directed staff to take on a more active role in assisting intervenors who were requesting information from regulated facilities. It is frustrating that your recommendations and directions have not been acted on to date.

In response to OPG's and CNSC staff's insistence that we should use formal access to information processes to obtain information from OPG about the Nuclear Generating Station, current timelines for interventions in licence renewal proceedings preclude this. Information requests can take several months, if not longer. And further, as Shawn-Patrick Stensil noted to the Commission yesterday, sometimes ATIP processes can cite these licence proceedings as grounds for denying information, insisting that these proceedings are proper avenues to obtain

information about nuclear facilities. Those formal information requests also cost money.

In response to OPG's assertions that it proactively publishes comprehensive information on its website concerning environmental performance at the Nuclear Generating Station, this is not the case. The environmental risk assessments and annual and costly compliance reports from OPG contain repeated assertions that the Pickering Nuclear Generating Station is operating within its licence conditions and that any exceedances are not environmentally significant. However, insufficient data is provided to demonstrate the veracity of these claims. These reports contain virtually no disaggregated data concerning any environmental monitoring within the PNGS site boundaries and what limited data is reported concerning offsite impacts of the station is often provided in annual or quarterly averages, and even then it is not consistently reported from year to year. Further, monitoring methodologies employed by OPG are not comprehensively explained, frustrating attempts to assess the significance or adequacy of the little sampling results that are provided.

Even with this extremely limited information available on the public record, our two scientific experts were able to identify several areas of

potential concern and make recommendations for their improvement at the site.

With regard to impacts of the Nuclear Generating Station's cooling water system on aquatic species and habitat, Dr. Henderson found that there may be cause for concern. The Nuclear Generating Station's cooling system extracts and discharges a massive amount of water, up to almost 5 1/2 Olympic-sized swimming pools per minute or what Dr. Henderson refers to as the flow of a small river. The plant, prior to the installation of the fish diversion system in 2009, was responsible for killing millions of fish, larvae and fish eggs each year due to impingement and entrainment. In 2008 the Commission directed OPG to reduce impingement by 80 percent. However, upon receiving impingement data since 2010, Dr. Henderson found that this 80 percent reduction was only achieved in three out of the past seven years. Even in the years in which OPG's data indicates that 80 percent reduction was achieved, Waterkeeper urges caution as the 2003 baseline upon which this reduction is measured excludes the round goby, a fish species that has become increasingly abundant in Lake Ontario over the last decade. Waterkeeper also cautions against the use of a single year baseline, which is problematic given the significant variability of certain fish populations around the station from year to year.

Dr. Henderson's review of impingement data also raises concerns with OPG's ability to comply with its new DFO authorization. The authorization requires OPG to discuss additional follow-up requirements if the station impinges more than 3619 kg of fish in two consecutive years. Given impingement values from 2010 and 2011, as well as 2014 and 2015, Dr. Henderson believes it is highly likely that this 3619 kg limit will be exceeded for two consecutive years in the future.

Further, despite high levels of entrainment and past Commission directions to OPG to mitigate these losses, no mitigation has taken place, nor is it planned, despite the availability of available technology such as sonar or diversion or the installation of full or partial closed cycle cooling for the station.

With this in mind as well as the discussions in our written submissions concerning thermal effects and potential chlorine discharges from the site, Waterkeeper is concerned that the Pickering Nuclear Generating Station will not be able to comply with the current *Fisheries Act* authorization. Waterkeeper is also deeply concerned that the facility has been permitted to operate for decades without a permit at all until January 2018. This seems like a clear violation of the *Fisheries Act*. Further, Waterkeeper is concerned about the exclusion

of invasive species in the current DFO authorization, which also seems to be inconsistent with the purposes of the *Fisheries Act*, namely the protection of fish that support fisheries recognized in the Act.

With regard to environmental impacts of effluent and other releases to groundwater and surface water, our other scientific expert, Mr. Ruland, found that there may also be cause for concern. Despite the fact that his review was limited by OPG's refusal to disclose groundwater and stormwater monitoring reports or data, Mr. Ruland found evidence of extremely contaminated groundwater below the Nuclear Generating Station, at one point as high as 3.96 million Bq per litre of tritium, which is over 565 times the Ontario drinking water standard of 7000 Bq per litre. This is down from the 30 million Bq per litre measured underneath the Pickering nuclear generating site between 2001 and 2005. These elevated levels of tritium are due to a series of historical leaks of the contaminant into groundwater, a product of a significant backlog of repairs and a lack of proactive facility maintenance. While OPG claims most of this backlog has been cleared, Waterkeeper is concerned that CNSC staff may have failed to require full remediation of this contamination, instead approving a site-specific contamination limit of 3 million Bq per litre for tritium non-potable groundwater. All of

these concerns pertain to tritium. However, Mr. Ruland cautions that elevated contamination levels may be present for other contaminants below the Nuclear Generating Station, something that it is impossible for us to verify given OPG and staff's refusal to provide groundwater monitoring reports.

When examining stormwater discharges from the Nuclear Generating Station, Mr. Ruland found that monitoring was sporadic and that since 1990 there appear to have been regular monitoring gaps of between three and eight years. When monitoring was done, it did not appear to have been performed on all stormwater discharge lines and when it was done, it failed to take into account often the seasonal variations that one would expect. It also failed to include follow-up monitoring instances in which elevated contaminant levels were discovered. This last point is particularly legally important as repeated failures of toxicity testing at specific stormwater catchment locations may constitute another violation of the *Fisheries Act*. Failed toxicity tests at this location prove that the water tested is lethal to aquatic life. For the limited test Mr. Ruland was able to find sampling values for, measured zinc levels in these locations were up to 17 times higher than provincial water quality objectives, copper values were eight times higher, and

cadmium levels also surpassed provincial water quality objectives. Significantly, certain stormwater catchments contain tritium levels as high as 39,000 Bq per litre, which Mr. Ruland identified as possible evidence that contaminated groundwater is leaking into stormwater infrastructure, constituting an unintended pathway of contaminated groundwater into Lake Ontario via stormwater outfalls. If this is in fact occurring, such discharges could easily violate the *Fisheries Act*.

Due to time constraints I will end my presentation there, but I look forward to answering any questions the Commissioners may have and I hope to be able to ask several questions on behalf of Waterkeeper on the record. Thanks very much.

THE PRESIDENT: Thank you.

Questions? Who wants to start? Ms Velshi...?

MEMBER VELSHI: Thank you for your submission. Let me start off with the first issue that the intervenor has raised, and this is inadequacy of public disclosure, and maybe I can get OPG to start off with why there wasn't a timely response to the information requests or what your thoughts are on it and then maybe staff can follow.

MR. MANLEY: Robin Manley, for the record.

I'm the Vice President Nuclear Regulatory Affairs and Stakeholder Relations.

Well, you have heard our commitment about disclosure and OPG would, you know, take issue with some of the claims of the intervenor in this case around denial of information. Raphael McCalla, our Director of Environment, is prepared to give a long list of examples of the kind of information that we have provided in response to requests from this intervenor during the process of the lead-up to the hearings. Those included a stakeholder session to which the intervenor was invited and an extensive list of questions to which we have responded, including providing them with a site visit.

In terms of insufficient disclosure of information and the fact that that topic has been presented to the Commission in the past and recommendations from the Commission, OPG has continually been increasing the amount of information that is provided on our website. Just to give you an example of some of those, our Predictive Effects Assessment that's on our website, it's current, it's 237 pages long. The Environmental Risk Assessment, it's current, it's on our website, 418 pages long. We have quarterly emissions reports going back years. Those were in response to requests from the Commission to provide more information and they were very carefully stakeholdered with

a wide range of interested parties as to what information would be most useful. There is a summary and then there are details in the back. So it's two --

MEMBER VELSHI: So let me just -- is there information that the intervenor has asked that you have not provided?

MR. MANLEY: There is some information which we have not provided. The groundwater monitoring data -- it's Robin Manley for the record -- Mr. Lockwood spoke to yesterday about that. But if I can just quickly close up here and then pass it back to Mr. McCalla.

The annual Environmental Monitoring Reports that we have on our website for years, each one well over 100 pages long with reams of data in it.

The intervenor claimed that we have -- or alluded to us not having provided information under FOI, citing the hearings as a ground to disclose. I have no idea what the intervenor is talking about.

MEMBER VELSHI: I think she was making reference to what Greenpeace had stated yesterday, a response that they had got. But I was really getting at information the intervenor has asked for that has not been provided. We did hear about the groundwater contamination -- and you are going to provide it now after the hearing -- wasn't available prior to that. So maybe

you can explain what you haven't provided and what the reasons are for that.

MR. MCCALLA: Raphael McCalla, for the record.

So I would first like to assure the Commission that OPG operates our facility in an open and transparent manner. We heard from the Community Advisory Council earlier this week that OPG routinely shares operational data with the Committee and requests feedback. Environmental performance is also discussed in this forum, as well as at stakeholder sessions, at the Durham Nuclear Health Committee meetings which are chaired by the Medical Officer of Health for Durham.

OPG objects to the intervenor's comment with respect to the request for information. There were at least three separate requests made by this intervenor and OPG made every attempt to meet those requests. While the requests remain outside of the freedom of information process, OPG applied the same level of rigour to obtain the information, to approve the information and to submit the information to the intervenor.

I will give you some examples of some of the information that was requested. There was a request made --

MEMBER VELSHI: Can you just narrow it

down to information that was requested that has not been provided and why?

MR. MCCALLA: Okay. Raphael McCalla, for the record.

So an example of information that was requested was borehole data for a groundwater program and that request was made really late in the process. That is historical information which requires a lot of time to actually pull together to provide to the intervenor.

MEMBER VELSHI: Would you have got back to the -- I'm trying to understand what the process is for disseminating information.

MR. MCCALLA: Sure.

MEMBER VELSHI: So would you have got back to the intervenor and said, look, this is highly labour-intensive, it's going to take us time, and would she have got that feedback?

MR. MCCALLA: Raphael McCalla, for the record.

Yes, we have provided that information. A good example again would be that the intervenor requested a tour of the site. The request came in on the 16th I believe of April. We wrote back to the intervenor saying that we couldn't accommodate the two dates that were requested, however, we would work on providing the other

information that you have requested and we will provide you with a tour at a later date, which we did. So we worked with the intervenor and at each step of the process we informed the intervenor as to our reasons and what we provided. In the case of groundwater, at the time we said we would not provide you with our annual groundwater reports. However, we provided the intervenor with the perimeter data for our groundwater wells and the rationale behind that.

MEMBER VELSHI: Is the contaminated groundwater monitoring results the only information that the intervenor has asked for that has not been provided to date? Any other one that's going to take a lot of time to put together?

MR. MCCALLA: Raphael McCalla, for the record. For the most part that is the case, yes.

MEMBER VELSHI: Thank you.

And, Ms Feinstein, if you were not listening to the webcast yesterday, OPG did make a commitment yesterday that they would be disclosing the groundwater -- the contaminated groundwater monitoring results.

Staff, my question to you is slightly different. If you do have OPG information and if intervenors are having difficulties getting that

information, maybe because they have to pull it out or they don't -- it's not a priority for them, do you facilitate disseminating that information to intervenors?

MR. FRAPPIER: Gerry Frappier, for the record.

First of all, I would like to start with the comment as far as taking direction from the Commission. So obviously, staff absolutely take direction from the Commission and both staff for ourselves within the information that the CNSC has but also with respect to requirements that we place onto licensees has increased the amount of data that is available to the public substantially.

Did we do enough, have we done enough? I think that's a question that's going to be with us forever. There is always a data set some place that somebody all of a sudden has an interest in, especially as we undertake more and more, like we have done here, providing funding for intervenors to get experts, experts then say, Where is this kind of data? So I think we still have a long way to go, I am not going to say that it is perfect by any means.

Having said that, we do get requests for data. It does not have to be through the access to information. We have an information line that people can make requests and that's done even just during this hearing

session there was, as was mentioned yesterday by one of the intervenors who got the information relatively immediately.

With information that is of a third-party nature, we do go back to the source of that data, in this case OPG, and ensure that it is acceptable for the release from their perspective. If it's not, then we have a discussion from ourselves as to whether we are going to require it to be made available; sometimes yes, sometimes no.

But perhaps I will ask Mr. Mike Rinker to give us an example of that.

THE PRESIDENT: But on this point of the third-party consultation, which is an access to information requirement which I accept, I accept it for everything besides environmental data. Why would we ever have any reason not to release environmental data? So I'm talking about the data, not information, not discussion, not emails, I'm talking about environmental actual measured data. What possible reason would there be for somebody to say no?

MR. FRAPPIER: Gerry Frappier, for the record.

I wouldn't disagree with you, other than, as was mentioned by OPG, there is a lot of that and sometimes it's a little bit of a timeliness to pull that

together. But perhaps I will ask Mr. Jammal.

THE PRESIDENT: I accept timeliness, but I don't except no.

MR. JAMMAL: It's Ramzi Jammal, for the record.

To complement Mr. Frappier's answers to you, sir, we took an immediate action. We immediately amended -- and I know I was single-handed watching this -- the RD-99.3, which is the public information program of licensees, by which we have directed -- it's a regulatory requirement now that the licensee will publish without any questions from anybody the ERA as a report and a summary of the PSA.

As Mr. Frappier mentioned, we are continually enhancing our public disclosure -- sorry, requirement of the licensee for public disclosure and we are going to amend that regulatory document. We were talking yesterday about communication with respect to the 50K zone in an emergency, we are going to continue to enhance our regulatory requirement.

In addition to that, I have committed personally to intervene or to write to me directly when they are not satisfied with an answer they get from a licensee or from staff. To date, I have not received one request for me to intervene.

Second, with respect to the information on the environmental values, I will pass it on to Mr. Mike Rinker.

But we are -- we do not say no and if it takes us to refile a submission from the licensee, we do this. So if the licensee declares part of information to be commercially sensitive, we will refile it and then make it publicly available and that is our process currently in the CMD process.

Mike...?

MR. RINKER: Mike Rinker, for the record.

As the director general responsible for Environmental and Radiation Protection, we're the directorate that often reviews these reports, whether it's fish or groundwater.

For this hearing, the only request that was received -- and similar to Mr. Jammal, we've said at hearings if you have trouble getting access to data, please reach out to us and let us know. There was only one request that came in for access to information. It was for the fish impingement entrainment annual report of OPG's, which was submitted to the CNSC I believe at the end of May. The report said "proprietary," we reached out to OPG, said, "We want to release this; can we have your permission to release this?" They said yes. We got that in writing.

We submitted the -- we gave the report.

Access to information requests are confidential. I don't know who asked for it, but it was provided. We facilitated that. It was the only request we got.

MEMBER VELSHI: So I'll put aside the access for information.

But this submission from the intervenor was May 7th, where they list here's all the stuff we have asked for. Here's how our requests have been thwarted by OPG, and CNSC hasn't been terribly helpful either.

So how would -- what alarms would have rung on the CNSC side to say we've got to facilitate this? I know, Mr. Jammal, you didn't get a direct call. But clearly the CNSC would have been aware that the intervenor's having problems getting information.

MR. FRAPPIER: Gerry Frappier, for the record.

I'm not so sure about that last comment. So we do get a lot of requests in. Comes into our -- if it comes into ATIP, there's quite a process for tracking that. But I know you don't mean that one.

So if it comes in as an information request through the information line, then there is a process by which that request is put forward. We then

provide that information through the -- we probably -- it's an area that we need to improve a bit on with is what if that information is not being made available, and especially when you say "in a timely fashion." So this goes to the people who have the information.

I would suggest certainly in the past few months we've had other priorities that these people would have been working on, and it probably would not have been necessarily that clear with a red flag going all the way up to Mr. Jammal or something like that.

So we do agree that there's areas we have to improve as far as administrative processes. But I want to be clear, it's not because of lack of intent to make sure that information is available.

MR. RINKER: Mike Rinker, for the record.

And the only evidence that we saw for this hearing in particular were in the interventions themselves. And so we're reviewing those. But it's into a new process, into the Commission process. It's unclear whether the Commission wants to direct us to respond to those in advance or whether that is something that the Commission would take as a measure of the licensee's performance or it's -- so it's in that sort of grey area as opposed to a request that's directly to us which we respond to immediately.

MEMBER VELSHI: Thank you. And before I get Ms Feinstein to comment on it, clearly, the CNSC needs to look at how do we enable this in a better way in consultation with the intervenor community.

So, Ms Feinstein, any comments from you on what --

THE PRESIDENT: So before we go into -- just to add -- I just want to take off the table there was a discussion about the report on the fish authorization for DFO, the annual report. And we discussed why is that not public and available. And I'm just wondering if that was one of the requests that were not fulfilled because it's too early and the DFO and CNSC are still debating how and when and who makes it available.

MR. RINKER: Mike Rinker, for the record.

So I need to clarify, the CNSC has an annual fish impingement and entrainment report that talks on the performance of mitigation measures. That has been an annual report ongoing through our licensing. We have not yet -- because of the authorization under *Fisheries Act* was only offered in January of this year, we do not -- there is not yet a published report under the *Fisheries Act* authorization.

THE PRESIDENT: But it will be coming?

MR. RINKER: On an annual basis, yes.

THE PRESIDENT: Okay, thank you.

MS FEINSTEIN: Thank you for the opportunity to speak to some of what's been said.

I would like to start by drawing the Commission's attention to page 3 of Appendix II of our written submissions. This is the expert report from Mr. Ruland. And I think it's worth just reading a very small excerpt for the record.

He notes that in response to the lack of information he's been provided with to do his report, he says that the situation is completely unprecedented for him. He says, "I have not previously encountered anything like this over the course of a 30+ year consulting career." He apologizes in advance to his clients, as he knew that we were counting on him to provide the detailed technical report about the 10-year licence extension that he just wasn't able to do.

He notes OPG's obstructionism and obfuscation. I've worked with Mr. Ruland for about five years now on several relicensing hearings before this Commission, many of them with OPG, and I haven't encountered this kind of behaviour or denial of information before with him.

He also provides four points --

THE PRESIDENT: Okay. So first of all, I

don't know where we're talking about, and I need to know specific what information was he not able to get, please --

MS FEINSTEIN: I'm just about to get to that.

This is page 3 of Appendix II to Waterkeeper's written submissions.

THE PRESIDENT: Yeah.

MS FEINSTEIN: It's Mr. Ruland's expert report.

So in the paragraph right under where he's expressed his concerns, there is a list of four points specifying very specific areas of information that he was not provided with. I can read them out for the record as well.

It includes:

"a complete set of borehole logs and monitor installation details for OPG's full network of groundwater monitoring wells and sampling points."

So this was requested and not provided, as well as

"up-to-date and useable groundwater level and grounds water quality monitoring data for the full network

of groundwater wells and sampling points."

He was denied a recent annual groundwater monitoring report, as well as

"a map and inventory of storm sewer lines for the site, including estimates of flows and a list of how many of these lines are being monitored on a regular basis"

as well as those monitoring results.

So he identified those four areas as crucial information areas that he required for his review. They were requested a month prior to when preliminary submissions were due.

Generally speaking, with the amount of funding that our organization receives, we can only afford to put in six weeks to a month of preparations in advance of that preliminary submission date. Anything more than that just isn't possible, given the funding. So --

THE PRESIDENT: So we dealt with the groundwater. I'm just trying to figure out about anything else in there beyond the groundwater that should have been dealt with or will be dealt with.

MS FEINSTEIN: There were two or so -- there were two requests from our other scientific expert,

Dr. Henderson. And he requested impingement and entrainment monitoring reports, specifically with information concerning failure events of the fish diversion system. And he also requested any event reports concerning events in which there were spikes in thermal releases. And that was denied to Dr. Henderson.

THE PRESIDENT: Okay. OPG, first of all, are there such reports? Are they releasable? Staff, do you get them? Just so we get clarity about what's releasable, what's not.

MR. MANLEY: So Robin Manley, for the record, and I'm going to pass it back to Raphael McCalla.

And this goes to what we were trying to say earlier is that there's a lot of things that we did provide. And if you continue to get ongoing requests throughout the process, there's limited capacity, frankly, at our end also to provide everything on short notice. So it's not as if, you know, people didn't know there was going to be a hearing or the licence application was coming up. So we did provide things, and Raphael McCalla will provide more details.

MR. McCALLA: Raphael McCalla, for the record.

So I've asked if the Commission can indulge me for a second, because I think it's important to

understand this whole request cycle and what actually went on.

So our first request came in on March 7th, which we did respond to round about March 26 for a slew of information. There were follow-up requests made on April 16th, April 19th, which we responded to each time, right through until May 14th there were requests made. And in each time, we took staff away from doing other work to facilitate responding to the intervenor.

With respect to the thermal information that she's asked for, that information was provided through the annual report that we send to the Ministry of the Environment. So we hold that report, but we actually sent it on. And that detailed the various thermal exceedances which we had during the licensing period.

We also sent the authorization which was requested.

With respect to -- I think there was one other piece of information that the intervenor mentioned a while ago, and I forgot exactly specifically what she said.

THE PRESIDENT: Spikes.

MR. McCALLA: Spikes, yeah. So with respect to the two events that we had with respect to the fish diversion system, that information was provided. It was not provided in terms of the actual annual report which

we submit to the CNSC, but we did extract that information, which was what was the cause of the failure, what do you know with respect to mitigation measures that you've put in place to prevent recurrence -- all that information was provided to the intervenor. And we have the records to show that.

MR. RINKER: Mike Rinker, for the record.

If I could, there was -- I think we were also referring to spikes in temperature, so thermal releases. And this is an area for which we have overlapping jurisdiction with the Province. The Province MOECC, I think, who is either here or on the phone, issues an environmental compliance approval which has temperature thresholds that must be met, and when there's an exceedance, there is a need for a report between OPG and the province.

We get copies of those reports. But when we look at thermal releases, we look from the risk assessment lens together with Environment and Climate Change Canada. So, the actual reports on the spikes of thermal releases are reports that go from OPG to the province.

THE PRESIDENT: So, maybe that's a good time to bring in those two ministries to have comments about some of those -- availability of this information and

the kind of release for any exceedance for any particular authorization.

Go ahead, please.

MS ALI: Nardia Ali, Environment and Climate Change Canada.

I'd just like to sort of give sort of our role with the thermal ERA, the thermal aspects of it and our conclusion based on our review to date. So, ECCC reviewed the ERA focusing on the thermal aspects and discharges from OPG. Based on our review to date, we concluded that the risk to fish from the thermal discharges from Pickering Nuclear is low. The low level of risk that does exist is because the local habitat is used by thermally sensitive species of fish, like Round Whitefish for winter embryo development.

As Mr. Rinker says, we participate in joint reviews with the CNSC just looking at the overall risk of the discharges to Lake Ontario.

OPG has committed to continue to monitor the thermal plume for two seasons starting in December and to make any adaptations or consider scientific advances in methodology, et cetera, in future studies.

So, we will be continuing to look at that data and recommending appropriate actions as needed.

Thank you.

THE PRESIDENT: Whatever information you receive in terms of authorization exceedance, are all those reports public?

MS ALI: Yes, we get our information via the CNSC.

THE PRESIDENT: Ontario Government?

MR. DUNN: Phil Dunn, for the record, with the Ministry of the Environment and Climate Change, Drinking Water Environmental Compliance Division, York Durham District Office.

I can read a brief, I guess a review of how the thermal plume is -- or thermal emissions are monitored.

THE PRESIDENT: Go ahead. Go ahead.

MR. DUNN: Thank you. The industrial sewage -- the facility holds an industrial sewage environmental compliance approval which contains conditions that limit the temperature of the cooling water effluent that is discharged from the station, subject to certain conditions.

The compliance approval also contains a limit for the average temperature difference between the water pumped into the station and water discharged back into the lake.

The Ministry has issued an order on OPG in

2015 in response to cooling water temperature exceedances at the station in 2014, and the order requires Ontario Power Generation to complete work to mitigate future potential exceedances, including the following actions:

Assess and mitigate impacts to near shore fish habitat from the increased temperature in cooling water resulting from the build-up of algae debris and ice in the station cooling water intake system during extreme weather in lake conditions;

Provide updates on the development of climate change adaptation processes and initiatives;

And, to provide the Ministry with adequate supporting documentation to consider an environmental compliance approval amendment for proposed changes to the cooling water temperature limits.

THE PRESIDENT: And your compliance verification, does that ever become public?

MR. DUNN: I'm sorry? Pardon me?

THE PRESIDENT: Do you release reports -- compliance reports or performance or exceedance; do you release this information?

MR. DUNN: Release the -- in terms of the -- no, we typically don't release compliance reports, but the information that we have we could provide.

THE PRESIDENT: So, if somebody asked for

it, would you release it?

MR. DUNN: Yes, yes. This information, it would be available if requested, yes.

THE PRESIDENT: Thank you.

Question? Ms Penney?

MEMBER PENNEY: Yes. Thank you for that, I did want to talk about thermal pollution first.

So, I guess my first question is for the Ontario Ministry of the Environment and Climate Change, I think that's an acronym.

So, the intervenor is concerned that cumulative effects due to climate change are not considered in the body of your authorization or your permit, your approval, but I hear you just mention a condition.

Can you elaborate on that condition and what you would expect to see that would demonstrate that OPG is considering climate change and cumulative effects as part of that thermal study?

MR. DUNN: Phil Dunn, for the record. Yeah, this was a requirement as part of the order. Typically it wouldn't be, but it was something that we wanted to see information on, an overall -- I guess the information package in response to the exceedances.

MEMBER PENNEY: Right. And so, my question is, what would you expect to see to meet that

condition, and thank you for clarifying that that was part of the order, the compliance order.

MR. DUNN: Phil Dunn, for the record. I'd have to get back to you on that, provide you with some of the details of that.

MEMBER PENNEY: Maybe Environment Canada, maybe Ms Ali, you...?

MS ALI: Nardia Ali, Environment and Climate Change Canada.

So, with regard to effects of climate change, ECCC acknowledges that water temperatures in Lake Ontario will likely continue to increase, however, we feel that in the relatively short time to 2024 when the Pickering units, or 2026 when the Pickering units are planned to be permanently shut down, it is unlikely that the water temperature increases in Lake Ontario will be significant.

And we also believe that the ongoing regulatory oversight and the updates to the ecological risk assessment will be able to detect and address these significant changes to water temperature and levels.

MEMBER PENNEY: CNSC staff have a comment?

MR. FRAPPIER: Gerry Frappier, for the record. I think the piece I would add is, just as was mentioned at the end, so, there is an environmental risk

assessment that is done, it's updated every five years and certainly anything associated with climate change effects on the lake will be something that will be taken into consideration.

So, we believe that we'll be on top of that.

MEMBER PENNEY: I don't know if DFO wanted to add any comment there. I think DFO's on the lune.

THE PRESIDENT: DFO, can you hear us?

MS THOMAS: Jennifer Thomas, for the record, Department of Fisheries and Oceans, Manager of Regulatory Review.

Based on our MOU with CNSC we feel that climate change has been covered off.

THE PRESIDENT: Maybe you want to also add your comments on the discussion we had about the fish authorization and compliance and publicly available information?

MS THOMAS: Jennifer Thomas, Department of Fisheries and Oceans, for the record. The *Fisheries Act* authorization has been issued. There are reporting requirements in that authorization.

With respect to compliance issues, being that there is an authorization in effect, we don't anticipate non-compliance with any of the conditions, but

if there is non-compliance issues with the authorization we would be working with CNSC to rectify that.

THE PRESIDENT: Thank you.

Question? Dr. Demeter?

MEMBER DEMETER: Thank you very much for the intervention,

I was looking at page 14 of Wilf Ruland's -- I hope I pronounced that correct -- report from 58A, and it's dealing with stormwater monitoring.

There seems to be sporadic monitoring between intervals of five to nine years, or 10 years.

And I wanted to ask CNSC staff, is there any regulatory requirements, is there any standards for the frequency of stormwater monitoring and the extent of it, and is there going to be a lot of -- a large facility will have a lot of potential stormwater outlets. How is that managed from a regulatory point of view and are they in compliance with what you'd expect?

MR. FRAPPIER: Gerry Frappier, for the record. I'd ask Andrew McAllister to respond to that.

MR. MCALLISTER: Andrew McAllister, Director of the Environmental Risk Assessment Division.

I'll speak to stormwater from the perspective of the *Nuclear Safety and Control Act*. We have other jurisdictions here who can comment on the

consideration of stormwater from their respective legislative mandates.

Really from CNSC staff's perspective and the *Nuclear Safety and Control Act*, we're verifying no unreasonable risk to the environment in that the licensee has taken adequate provision for protection of the environment. In doing so, the environmental risk assessment is one of those key documents that allows us to check on those risks.

And the stormwater -- so, there isn't a requirement to do regular stormwater monitoring, but what is expected is that it is covered off in the environmental risk assessment in an appropriate way.

So, what we have here is that in the 2014 ERA, OPG had summarized its stormwater monitoring results and did a risk assessment on those on the impact of stormwater to Lake Ontario near shore included no risk, the values were below provincial water quality objectives, guidelines, those aspects.

But what they did do between those two periods and consistent with risk assessment, if there's gaps identified or if there's a need to refresh information, one should do so. So, they went out and did the stormwater monitoring campaign, 2015-2016, reported on that in a lot of detail. I recognize the intervenor, one

comment was lack of detail. One can find a lot of that stormwater detailed information in the appendices of the ERA and they redid the risk assessment on that component which sort of confirms conclusions that were derived in 2014 that stormwater is not posing a risk to the aquatic environment.

Moving forward, there is still an expectation that -- and they have committed to in their environmental risk assessment to do future stormwater monitoring around catchments that may be affected by future development activities and any other sort of periodic check, as per the standard.

THE PRESIDENT: But let me understand. But you do measure continuously the quality of water of the lake near shore. Why is that not a good proxy about what goes into the lake?

MR. McALLISTER: Yeah. Sir, there is -- OPG does have a robust environmental program in alignment with CSA Standard 288.4 on environmental monitoring of which includes surface water monitoring for a variety of radiological and non-radiological parameters, and we do use that information to get appreciation of what if any issues may be posed to Lake Ontario.

THE PRESIDENT: So do you also monitor that water quality near where the stormwater is likely to

go into the lake?

MR. MCALLISTER: OPG is probably in a better position to link locations of surface water sampling to stormwater outfalls but with respect to some complementary monitoring that we do, I'll pass it to Ms Sauvé.

MS SAUVÉ: Kiza Sauvé, I'm the Director of Health Science and Environmental Compliance Division.

In the Darlington hearings in 2015 stormwater was a hot topic of conversation as well, and one of the outcomes of that hearing was that hazardous substances was added into the CNSC's independent environmental monitoring program. Up until that point, we were doing radionuclides in an IMP around nuclear reactors. In the 2017 campaign we added in hazardous substances and, as you noted, it's a good proxy to see what's in the lake and there was nothing that we found through our campaign in 2017.

THE PRESIDENT: OPG.

MR. McCALLA: Raphael McCalla, for the record.

First of all, I'd like to assure the Commission that the stormwater that runoff from the station is well understood. There is a process with respect to getting approvals for your runoff from your facilities. So

OPG, as part of the approval process, submitted an overall stormwater management plan. That plan is sent to the approvals branch of the Ministry of Environment and Climate Change for approval. Based on that approval, OPG is then required to comply with those requirements. So OPG currently has an environmental compliance approval in place for stormwater.

There is one condition in that approval with respect to monitoring stormwater and what it says is that for our containment structures, our secondary dykes, we are allowed to discharge water from those dykes to our yard drainage system but we have to analyze that water prior to discharge. That's the only requirement that's in the actual ECA.

Outside of that process, when we complete an environmental risk assessment, which is completed every five years, during that process we would go and actually monitor or take samples from our discharge points to understand potential impacts and also what those impacts are within the near shore.

So that's the process that exists to go back and verify that the stormwater management plan that's in place is adequate and is meeting the needs to ensure there are no adverse impacts to human health and the environment.

THE PRESIDENT: And Ministry of Ontario of Environment and Climate Change, are you satisfied with the way this is being done?

MR. DUNN: Phil Dunn, for the record.
Yes, we are.

THE PRESIDENT: Thank you.
Questions? Go ahead. You wanted to after this?

MS FEINSTEIN: Thank you, Commissioners.
I would like to note two broad things. One of them is that I actually wasn't able to finish my response to a previous subject of conversation which was access to information. So I would like an opportunity to provide some of my thoughts about some of the information that has just been provided by OPG and CNSC staff, and then I do have some responses for the most recent discussions based on stormwater monitoring.

THE PRESIDENT: Go ahead.

MS FEINSTEIN: Thank you. So to return to a few points previously concerning public access to information, I mentioned very briefly and gave examples of specific areas in which more information was required and hadn't been received yet.

Something else I want to address in what OPG was able to tell the Commission, OPG does make pretty

frequent references to how many pages are in documents that it provides to the public as evidence of a robust disclosure, so saying that we have released a document that was 500 pages long is evidence as how committed we are to public information disclosure. But to use OPG's own licence renewal application as an example of how such large documents can still contain a lack of environmental monitoring data, which is what we are requesting, I'll draw the Commission's attention to the fact that in the 376-page application, only about five pages were devoted to impacts on local surface and water quality with very little raw data. Even in CNSC staff's CMD, in their review of OPG's application, fewer than 25 pages out of 472 were devoted to the specific areas on which we were intervening.

So I would caution against any correlation between the size of the documents that OPG or CNSC staff discloses as evidencing meaningful disclosure on the subject that we are concerned with.

Also, the quality of data that's contained in reports that are publicly available is quite poor. Dr. Henderson calls it "highly digested" data, so it's data -- it's not the data that is being released. It's the interpretations of the data. So in order to verify the findings, organizations like civil society organizations with the expertise really need the access to the raw data.

And the data is required to be kept and retained on the premises, so providing this information shouldn't be too demanding, which brings me to the issue of timelines.

So it has been raised that a challenge for CNSC staff, as well as OPG and other regulators for providing information has been the short timelines. I do want to say on the record that I am sensitive to these concerns. They are concerns under which our organization operates as well. There isn't a lot of time to prepare for these hearings or sufficient funding to give the preparations the time that they might require or deserve.

That being said, in Appendix 3 to Waterkeeper's submissions, that appendix includes a timeline of all email correspondences between our organization and OPG, as well as between our organization and CNSC staff. Those emails show that all of the information that we requested that we haven't received, so all of the information I read only a few moments ago, was included in an April 26 email to both OPG and staff -- CNSC staff.

There are records also in that same Appendix 3 of ways in which the limited disclosure that we received with regard to some of the questions was inadequate and required a second round of questions, and that's not uncommon.

But I do want to have it on the record that our organization was diligent. We provided a list of comprehensive questions by April 26 and CNSC staff, as well as OPG, had until June 12th to provide supplemental information. So if they didn't have enough time by the May 7th written submission deadline for intervenors that is understandable -- or they didn't ask for more time at that point. They just refused to provide the information. But even that, notwithstanding, they had until June 12th to provide additional materials.

Even in our May 18th written submissions, we detailed again the information that was lacking. So even between May 18th and June 12th, one would have expected some additional disclosure. But in the June 12th supplemental responses from CNSC staff, as well as OPG, not only is no additional environmental monitoring data provided or not only is no environmental information provided in addition to what was already included in the initial CMDs and applications, but no reference to outstanding requests or attempts to look into them were included in those June 12th submissions.

I also want to draw the attention of the Commissioners to the February stakeholder meeting that OPG hosted. Our organization does thank OPG for hosting that meeting and I was able to attend via teleconferencing. But

Greenpeace and Northwatch made requests for groundwater monitoring reports right after those stakeholder sessions. So this is the end of February. They only received a response in the first week of May, one sentence saying their request was denied, and not giving any reasons for it.

So again, when it comes to timelines, OPG had between the end of February and mid-June to provide a groundwater monitoring report that was already prepared. It was already completed by the time requests were being made for it. Not only was that report not provided, no reasons for the refusal were provided, and CNSC staff didn't step in to require the provision of that report.

So I do want to underscore that CNSC staff were given copies of our requests by April 26th, and in the second request that I made on May 2nd when it looked as though we weren't going to be able to meet the May 7th submission deadline, I wrote specifically to CNSC Staff, my contact with the Secretariat, explaining that Mr. Jammal had promised or had offered to intervenors in the past that if we had difficulty obtaining information, we could invoke his name and hopefully be a bit more successful in receiving that information.

So Mr. Jammal did note just now that he had made that offer. I recognize that he did make that

offer and I'm very grateful for it. I did invoke it on May 2nd and it's in our Appendix III, the e-mails invoking that. And it didn't help us either.

From that May 2nd e-mail expressing concerns about lack of information, I have not received any correspondence from CNSC Staff stating that they would assist us in obtaining information, that they were working to find out why we weren't receiving information. I have received no information from them --

THE PRESIDENT: Okay, we already accepted that the lack of information was on the groundwater and a lot of those things. So we already accepted that the system was broken.

MS FEINSTEIN: Yes.

THE PRESIDENT: So let's move on to whatever else you want to say.

MS FEINSTEIN: Okay, there was one more point. And again, this may have been on the public record before but there have been certain representations made to the Commission at this hearing and I want an opportunity to be able to provide a narrative of our experiences.

THE PRESIDENT: All your e-mails are on the public record.

MS FEINSTEIN: Okay, thank you.

So I want to recognize that OPG is very

good when it comes to interacting with the general public to notify the public that it's in the community, or the local community around Pickering they do a lot and are very active within that community.

So nothing of what I'm saying has anything to do with the community events that they are a part of.

My concern is when it comes to civil society organizations that have the expertise to challenge some of the assertions that are made about the environmental safety of the facility. And that's where we come against a lot of problems and transparency and that's where accountability really crumbles. So I do want to make that distinction.

Those are all the points I have about the public information discussion that was held earlier.

When it comes to storm water management, in response to some of Member Demeter's questions, I have two points that I would like to make in response to some statements from CNSC Staff and OPG.

The first one concerns the Environmental Risk Assessments.

Again, these are very large documents but they do not contain significant amounts of raw data sufficient for our scientific experts to be able to get a good handle on what's happening. Datasets are often

averaged. Again they are not regularly reported in a consistent way from ERA to ERA.

So if these ERAs are supposed to be the sole source of environmental data upon which we would come up with an expert review, they are not sufficient.

So for future hearing processes we would strongly recommend and urge the Commission to require more proactive environmental monitoring disclosure than is contained in the ERAs.

I should stress that the only reason the ERAs are on the public record in this hearing is a result of Waterkeeper's intervention in last year's Pickering Waste Management Facility where we were denied access to the ERAs, or the most recent ERA, and it took us at least a month or two to get a previous version of an ERA.

So even last year that information was denied to us.

There was also, I think in response to that intervention, an opportunity for members of the public to comment on the CNSC's Regulatory Document. At that time it was 99.3, but now it's been revised at 3.2.1, which contains the requirements for regulated facilities and the types of public information disclosure that is mandatory.

I think as a result of our intervention ERAs have now been included in that Regulatory Document.

It's a wonderful step forward. But in our comments about amending that Regulatory Document we urged the Commission and CNSC Staff to include the mandatory release of more detailed monitoring reports, so actual monitoring data. And that wasn't included in the Regulatory Document.

So I understand that that's out of the scope of this hearing but I wanted to provide that as context. We have been advocating for this for quite a long time and see this is an opportunity for the Commission to step in and use its regulatory authority to require more proactive disclosure.

THE PRESIDENT: So maybe Staff can talk about the kind of data that's behind the ERA. I'm finding it surprising that the data is not sufficient to do analysis. It better be sufficient for you to do analysis.

I'm trying to understand what the disconnect here is.

MR. FRAPPIER: Gerry Frappier, for the record.

I'll pass it to Mr. Mike Rinker.

MR. RINKER: Mike Rinker, for the record.

I think there's a number of areas in environment for which there's data which we agree needs to be brought forward. It's much easier for us to do our own

data, so our own Independent Environmental Monitoring Program data is available on line. There's a link you can click. It downloads as a CSC file into Excel, so it's readily available.

Our next step is to see what we can do about licensee's data. OPG does provide their quarterly reports that include weekly release data. So the weekly concentrations in their effluent is provided on their website.

But industry-wide our first step to make licensee data available is when we publish this year's Regulatory Oversight Reports, there's an appendix on releases to the environment for all facilities.

That's data that is presented in a manner that is consistent with Environment and Climate Change's Registry called the National Pollutant Release Inventory, where non-rads are provided in terms of total tons or total kilograms released on an annual basis.

But this is an appendix to the Regulatory Oversight Report, which is really just one step.

The next step is to try to get the rest of the data more accessible online in a way that can be -- we're working with Environment Canada to have it queryable so that when you go to the MPRI site you can search for data and that would direct you even to the Nuclear Safety

Control -- to our web page to get that data.

It does take time. But we certainly agree that there's changes in expectation for availability of data. We want to facilitate that but it will be in a step-wise manner.

THE PRESIDENT: Okay. I interrupted you.

MS FEINSTEIN: Thank you, President Binder.

That's encouraging to hear that more information will become available in the future and I look forward to seeing how that will take shape.

The one issue that I did want to discuss was also in relation to one of the questions you had, President Binder, about whether measuring toxins or contaminants in surrounding lake water quality can be sufficient to understand the impacts of the site to the environment.

I think there's a significant legal reason for why such an approach would not be sufficient, and that's compliance with the *Fisheries Act*.

So under Section 36(3) anything that's released into the environment needs to be tested prior to release, prior to dilution, to determine whether or not a facility complies with the *Act*.

So having a robust monitoring system that

monitors contaminants on site prior to dilution is the only way that you can determine compliance with that provision of the Act.

THE PRESIDENT: Can I get some -- to me, we are talking about two different things; one is compliance with the Act, the other one is impact to the environment.

As long as you have longitudinal data around the perimeter, I don't understand why that's not a cumulative measurement of the last 30 years' impact of this facility on the lake.

So there's two different things.

Somebody can help me maybe on the legal aspect here.

MR. FRAPPIER: Gerry Frappier, for the record.

I would ask Mike Rinker.

MR. RINKER: Mike Rinker, for the record. Then I will ask Kiza Sauv e to follow up.

There is a requirement for an Environmental Monitoring Program, as well as an Effluent Monitoring Program. They are separate programs.

So certainly releases to air are monitored and reported as releases, not as diluted in the environment; releases to water in the same way.

Maybe some more detail could be provided by Kiza Sauvé.

MS SAUVÉ: Kiza Sauvé, for the record.

President Binder, as you mentioned, the section of the *Fisheries Act* that Environment Canada and Climate Change is responsible for, I'm going to actually pass it to them to respond to this question.

MS ALI: Nardia Ali, Environment and Climate Change Canada.

Before I respond to the actual question, I just want to make sure everybody in the room understands what storm water is.

So storm water in MOE's documents is defined as rainwater runoff, snow melt, surface runoff, natural drainage from a plant site. Storm water discharges associated with any industrial activity are included, but are not limited to, discharges from drainage areas, drainage ponds, material handling sites, raw material storage sites.

Mr. McCalla sort of outlined what their obligations were under MOE's legislation.

Now with regards to the *Fisheries Act*, we in Environment Canada have had extensive discussions with Ontario Power Generation and CNSC through our review of the ERA about the potentially deleterious substances that get

into storm water. Most of it is from runoff, not associated with power generation as such.

Recent results of storm water analyses in 2015 and 2016 did not show acute lethality -- or generally didn't show acute lethality. OPG has proposed to monitor storm water when there are major changes to site structures as storm water does change depending on the event or depending on which buildings are on site, and to take appropriate actions and consultation with CNSC and Environment Canada if the monitoring data revealed a need for those actions.

We agree that monitoring data should be made public. We are a big believer in data being public.

In general, on the *Fisheries Act*, so on a compliance aspect, when Environment Canada is made aware of any data or situations that could potentially lead to contravention of Section 36, we deal with another part of our group, our enforcement people, and appropriate action is considered, if necessary, in accordance with the *Fisheries Act* compliance and enforcement policy.

But right now we're going to be looking at the monitoring data and keeping our oversight through that.

THE PRESIDENT: Thank you.

MR. MCCALLA: Raphael McCalla, for the record. If I may say a few words here.

So I'd like to take the Commission back to some of the statements that I was making earlier. Because I think it's important that we get the process on the record.

So OPG's environmental protection program complies with all applicable CSA Standards. So if we're talking about our environmental monitoring program, which looks beyond our station, it complies with CSA N288.4. If we talk about our effluent monitoring program, it complies with CSA N288.5. We talk about environmental risk, which really encompasses looking at all of those other programs to ensure that you are adequately protecting the environment.

With respect to storm water, as I mentioned earlier, there is an approval in place to manage storm water. On a five-year basis we go back and we verify that nothing has changed at the site that we don't understand and, if there are changes, those are implemented.

What Environment Canada and Climate Change was referencing a while ago is speaking to the fact that every five years when we go back and we look, if we see, for instance, that we had a toxicity issue, then we'd go and look at our programs, look at our effluent programs to see if there's anything that is changed which we don't

understand, and make sure we put in place controls to prevent that.

So that's really what we're talking about here. I can assure the Commission and the public that we fully understand and characterize our effluents that leave the site and we can continue to demonstrate that we are protecting the environment.

MR. LOCKWOOD: Randy Lockwood, for the record. I said it at the beginning of this hearing and I'll say it again, I'm responsible for the safe and reliable operations at Pickering, and I believe we're setting examples for the industry, ours, and others to follow.

It speaks to our commitment Number 5 to be open and transparent, and I'm proud of our team. I gave them three things when we started this licensing process sometime ago: 1) was be consistent and transparent with our messaging, given the technical nature of our business, so that the public can understand; 2) so that the public is comfortable and the community, that they understand what we're doing; 3) that they gain confidence for our continued operation at Pickering.

We did host a stakeholder session, and I thank the intervenor for making mention of it, she's the only one that did this week.

At that stakeholder session we did discuss our environmental monitoring program, we did discussing our licensing plans and our plans for the site; why we were looking for a 10-year licence out to 2028, and to end commercial operations at 2024, and safely shutdown the units, remove the fuel, and remove the water.

We also did discuss the PSR, why the plan continued operation is safe. Routinely, we post operational reports and environmental reports, and that's very important for me, so that the public knows and has confidence in our safe and reliable operation, particularly so that the emissions are low and, as a result, the doses to the public are very low, a small fraction of regulatory limit.

Proactively, for this licensing period, I was very insistent on that I didn't want to get into all kinds of *Freedom of Information Act* and requests as such, so we proactively issued a lot of information on our website. I'll admit a lot, our application, our letter to the Commission of our intentions to end commercial operations in 2024, the entire PSR, the Fisheries authorization, and our preliminary decommissioning plan. That's only a few of many others.

Specifically for this intervenor, when they came to me about groundwater, we issued -- I was

committed to releasing groundwater yesterday, I want the guidance of our community advisory committee -- but we did issue Quarter 4 data for the site perimeter wells in advance of posting on our website so that we at least go into this hearing with some information.

Thank you.

THE PRESIDENT: Thank you. Questions? Go ahead.

MEMBER PENNEY: I have a couple of short snappy ones. So this is a question for OPG. The intervenor talks about chlorine shocking, which you do for biofouling reasons. I just want a clarification about what happens to that chlorinated effluent before you discharge it into Lake Ontario?

MR. MCCALLA: Raphael McCalla, for the record. So we do use chlorine as a control for zebra mussels. We are required to neutralize the chlorine before it's discharged back into the lake by using another chemical called metabisulphite.

MEMBER PENNEY: A short snapper for Ontario Ministry Environment and Climate Change. Are there two different approvals, one for storm water discharge and one for the thermal plume?

MR. DUNN: Phil Dunn, for the record. They are covered in the same approval.

MEMBER PENNEY: A question for Environment Canada and Climate Change. Are there any effluent discharge requirements for the storm water runoff to meet s.36 *Fisheries Act*?

MS ALI: Nardia Ali, Environment and Climate Change Canada. No, we don't have a specific permit or approval, but we do review monitoring information and provide recommendations to the CNSC.

THE PRESIDENT: I think there is the Ministry of Ontario for Natural Resources and Forestry that also has responsibility for management of the lake. Are they here or are they online?

MR. TODD: Andy Todd, Ontario Ministry of Natural Resources, we're here.

THE PRESIDENT: Okay. We heard now from all agencies, maybe you can give us a minute about your roles and responsibility with respect to some of the items we are discussing?

MR. TODD: Andy Todd, OMNR, for the record. Our mandate is for the Ontario Ministry of Natural Resources at the Lake Ontario Management Unit is for fisheries management for Lake Ontario, the St. Lawrence River, and the Bay of Quinte. So we have a mandate to manage for sustainable fisheries to support recreation, commercial, and subsistent harvest for those fisheries.

THE PRESIDENT: So how do you monitor some of the impact of this particular facility on the lake?

MR. TODD: Can you repeat the question please? You trailed off.

THE PRESIDENT: So how do you monitor the environmental impact or the impact of the Pickering facility on the lake and on the fish?

MR. TODD: So there are specific studies related to the Picking facility, related around whitefish, and we've been working with OPG to monitor the population status around whitefish for the last number of years.

More broadly, we monitor fish populations on a lake-wide scale, so we monitor prey fish abundance at a whole lake-wide scale with the United States using a comprehensive trawl program and hydroacoustics across the entire lake.

THE PRESIDENT: So any exceedences or concerns that you are aware of?

MR. TODD: No concerns related to sort of prey fish abundance. Again, at a lake-wide scale, what we're seeing from a mortality at Pickering is not detectable at a lake-wide scale.

THE PRESIDENT: Thank you. Ms Penney, I interrupted you.

MEMBER PENNEY: Another short snapper for

OPG. The intervenor said that there was a failed toxicity test on storm water monitoring, I think it was MH211. The recommendation was around DFO investigating.

I just want to know what OPG did when this toxicity data became available, what follow-up you would have had, what corrective action is required/was required?

MR. MCCALLA: Raphael McCalla, for the record. I believe the comment made by the intervenor refers to a previous study. In our latest study, which was done in 2015, that particular location did pass toxicity testing.

MEMBER PENNEY: Yes, but my question is what did you do at the time, what corrective action and what follow-up would you have taken when you had that failed toxicity test?

MR. MCCALLA: Raphael McCalla, for the record. So, again, I'd like to go back to the ERA process. What we do in terms of the ERA process, we're attempting to understand the impact to that aquatic environment.

So, as a result of any exceedences that we would have seen, in this case toxicity testing, a requirement would be to go back at sometime after that to verify what's going on.

So a better example that I could probably give you is, if you look in this report, there's another

area, CB70, where we actually saw a failure in the 2015. What we did was we went back in the spring, we sampled to confirm whether or not that's the case.

In that particular example, we passed, so we concluded that that was like a one-off thing and there's not an ongoing issue with that particular runoff.

So in the case of MH211, we would have done the same thing.

MEMBER PENNEY: CNSC Staff, does that meet your requirements?

MR. MCALLISTER: Andrew McAllister, Director of the Environmental Risk Assessment Division, for the record. It does. As Mr. McCalla mentioned, its measure, if there is an issue, do some sort of verification or check, and then put it into the context of risk. That's the process that was followed.

THE PRESIDENT: Questions? Questions?

One last one, just because I find it surprising. Recommendation 18, please explain to me, what are we talking about, this groundwater tritium limit of 3 million Bq per litre? First of all, is there such a limit? Does it exist? What is the concern here? Anyone? Who wants to start? OPG, is there such a limit?

MR. MCALLISTER: President Binder, I can -- given that the recommendation was directed towards

CNSC, perhaps we will speak to it first and then if --

THE PRESIDENT: Go ahead.

MR. MCALLISTER: -- if OPG wishes to add or complement it.

First of all, to be clear, it is not a limit. It is not a regulatory limit, it never was a regulatory limit. This emanated 18 years ago, in 2000, and it was a generic screening criterion developed by OPG to deal with legacy contamination issues at the site. It was not meant to be used under normal operating conditions, it was intended only for historical contamination. So you will note that that was a criterion developed from a risk assessment perspective. We know -- there is no mention of it in REGDOC-2.9.1, there is no mention of it in CSA Standard 288.7 on groundwater. It was a criterion used at the time to deal with legacy contamination.

Currently, we don't look at that value from a regulatory lens. We look at the annual groundwater monitoring reports, magnitude of levels, trends, behaviours, any potential releases and then the expectation that corrective actions are taken by OPG, which they have done and which we have detailed in both our CMD as well as the supplementary CMD.

So I guess to be clear, it never was a regulatory limit and it is no longer currently used for

regulatory oversight purposes.

THE PRESIDENT: Thank you.

Do you want to add anything to this?

MR. McCALLA: No, Commissioner.

THE PRESIDENT: Okay. Over to you.

MS FEINSTEIN: Thank you. I do have some quick responses to what has been said.

Firstly, concerning the issues of section 36(3) of the *Fisheries Act*, that is the section that prohibits the release of deleterious substances to waters frequented by fish, I would like to draw the Commission's attention to the 2013 Memorandum of Understanding between the CNSC and the DFO that requires the CNSC to ensure compliance with the *Fisheries Act*. So ensuring compliance with the Act is a primary responsibility of the Commission at this hearing.

The definition of stormwater that was provided, namely that it concerns rainwater runoff from the site, doesn't necessarily apply to the Pickering Nuclear Generating Station if it is true that the stormwater infrastructure is acting as a conduit for the release of contaminated groundwater. So the type of environmental risk assessment done of the stormwater infrastructure shouldn't just be the kind of risk that is done for usual industrial stormwater systems, it should be a risk process

that takes into account the likelihood that extremely elevated contaminants in the groundwater plume below the Nuclear Generating Station is leaking into stormwater catchments. Even the approach of sort of risk modelling to get an accurate picture of stormwater releases is extremely problematic also in the context of the Pickering Nuclear Generating Station and I think all of this highlights the importance of actual monitoring on the site.

Mr. Ruland recommends in his expert report and in Waterkeeper's written submissions that actual testing of all catchment and outfalls be undertaken on a quarterly basis. It's only by doing actual monitoring where we would have any kind of idea of what the actual stormwater releases are to the environment and it's only by that actual monitoring that the CNSC would have an idea of whether or not this facility has a stormwater system that complies with the *Fisheries Act*, and that is a determination that does need to be made at this time by the Commission.

So that's what I will say about *Fisheries Act* compliance and the stormwater system.

The other issue that I wanted to raise was the contention that it is sufficient to release data from the perimeter groundwater wells at the site. Here I would draw the Commission's attention to the fact that Mr. Ruland

still hasn't received a comprehensive topographical map of the site or detailed groundwater monitoring from wells at the site. And so, because he is denied that information, he can't actually review the location of the perimeter wells to see if they are sufficient, if the perimeter wells' placement is adequate and whether they are in fact collecting or taking into account all the potential pathways.

THE PRESIDENT: Are there such maps, topographical maps available? Staff, do you actually monitor the plume from the site to the lake and see its progression from year to year?

MR. RINKER: Mike Rinker, for the record.

CNSC does not monitor the groundwater, but OPG does and we have been following their progress, their groundwater monitoring reports for many years.

MR. McCALLA: Raphael McCalla, for the record.

If I may add something here with respect to just the overall groundwater program and I would also like to clarify a comment that was just made. So I will start with the comment first.

So OPG has no evidence to suggest that contaminated groundwater is actually being discharged by the stormwater, which I believe was part of the

intervention. I just want to put that on the record.

I will also say that in terms of our groundwater monitoring program, the groundwater monitoring program at Pickering nuclear has been in existence for about 20 years. It is quite extensive. We have heard the notion that there are probably about 140 wells; there are actually about 300 wells on the site.

What we do on an annual basis we actually decide based on risk which wells we should monitor. So every year we make that decision and based on that we determine the frequency as well as locations to be monitored. And that also speaks to the parameters that we monitor. So every year we make that decision. We can demonstrate the flow patterns. So while you will see that primarily the further you go away from the actual units themselves flow is towards the south, towards the lake, but as you get closer to the actual reactors the flow is actually directed northwards, so it goes away from the lake. And any groundwater that actually leaves the site does so through a monitored pathway.

So we have a good understanding, we know exactly where we have any challenges with the process, and we continue to monitor those areas to understand the trends and whether or not we need to take additional actions to protect the groundwater.

MR. FRAPPIER: Gerry Frappier, for the record.

I would like to also add, because we were talking about the overall monitoring, but as mentioned, there are actual specific wells and there are tests that are done on a regular basis and I would ask Mr. Ed Leader to talk about what we do onsite for each one of those measurements.

MR. LEADER: Ed Leader, for the record.

So, as our colleagues said, we don't do our own monitoring of groundwater, but we do have a current enforcement action on OPG to identify whenever they find an unusual reading on one of those ground tube wells that they report that to us and we follow up, identify what the source is and what the pathway is. So we currently have an ongoing enforcement action in that area right now.

THE PRESIDENT: So how often do you get such reports?

MR. LEADER: We meet with the Director of Operations and Maintenance and Engineering on a weekly basis, so we find that information out at those meetings, but then we get a monthly written update.

THE PRESIDENT: What I'm asking for, are there often reports of something not right or exceedance or whatever?

MR. LEADER: Ed Leader, for the record.

Over the last few years we have had increases around the Unit 5 and Unit 6 reactor buildings. The sources were identified. That information was provided to the Commission. We are continuing to follow up on the repair work and the effectiveness of that repair work as part of our ongoing compliance activities.

THE PRESIDENT: Thank you.

Any other questions? Go ahead.

MEMBER PENNEY: The intervenor's Recommendation 6, that entrainment monitoring commence immediately rather than in 2021, this is probably a question for DFO or CNSC. If one or both of you could answer why it begins in 2021, not in 2018?

MR. FRAPPIER: Gerry Frappier, for the record. I would ask Department of Fisheries and Oceans to comment on that.

MS THOMAS: Fisheries and Oceans, for the record.

As you know, the facility will be shutting down and we determined that one more year of monitoring would be adequate.

MEMBER PENNEY: In addition to monitoring data already collected? Is that what you mean, DFO?

MS THOMAS: Jennifer Thomas, for the

record, Fisheries and Oceans. That is correct.

And I guess the other point that I will add is that as the facility shuts down they will be withdrawing less and less water, so we expect entrainment to also decrease. This is why we have only asked for one more year.

MEMBER PENNEY: And how many years have they collected entrainment monitoring data already?

MS THOMAS: Jennifer Thomas, Fisheries and Oceans, for the record.

I believe it's just the one year, but OPG could confirm that for me.

MR. McCALLA: Raphael McCalla, for the record. Perhaps I can add a little bit to this discussion.

So the entrainment study that was last completed was in 2006. That was used as the data set for the authorization which was issued to OPG in January of this year. One of the reasons why we are not going to complete the entrainment study until 2021 is because there is a lot of planning that has to go into this and we also have to ensure that we are doing it at a time where it accurately reflects the total operation of the station. So we have to look at the outage plans for the site to make sure it's comparable to what was done back in 2006. So based on that and the planning that goes into this, this is

an extensive -- it requires extensive planning to pull together the necessary equipment and the placement of that equipment to do this work, we thought that the best time to accomplish that would be in 2021.

MEMBER PENNEY: So it requires small mesh size nets and a shutdown; is that what I'm understanding?

MR. McCALLA: Raphael McCalla, for the record.

No, it does not require a shutdown. It actually requires the opposite, right. So you want to make sure that your units are running at the time because it's based on the amount of water that you are actually pulling for cooling purposes, right. So that's part of what you are looking at. So we have to do it -- and I can't get into some of the details because it is commercially sensitive, but we have to look at what is the optimum time based on the plans over the next year, couple of years, to see when we could find a window that would accurately reflect what was perhaps done in 2006 so we can compare the data to ensure that it's meaningful. I'm not sure if I'm answering your question.

MEMBER PENNEY: Thank you.

THE PRESIDENT: What is commercially sensitive about this?

MR. McCALLA: It's more in terms of when

we plan to have units off the grid, so to speak. It's that kind of information that may be sensitive.

THE PRESIDENT: So that's not the actual study itself?

MR. McCALLA: No, it's not. It's not the study itself, no.

THE PRESIDENT: Okay. Just checking. Any other questions? Don't be shy.

MEMBER PENNEY: I guess a question for DFO because we may lose you. You know, that seems -- that's 15 years since the first study. Is that adequate in your opinion?

MS THOMAS: Jennifer Thomas, Department of Fisheries and Oceans, for the record.

I think for this particular site it does make sense. The way the authorization has been written is there are several contingency and reporting requirements within the authorization and there is flexibility within the offsetting that if we find out that the entrainment monitoring has changed sort of our outcome, we can adjust the offsetting to offset for any additional impacts. So we are not overly concerned with adding more monitoring for this particular facility.

THE PRESIDENT: But let me understand something. When was the Act passed that required this kind

of authorization to start with? I thought there was a recent Act. Can somebody remind me about that? It wasn't a requirement way, way back. Am I totally off base here?

MR. McALLISTER: Dr. Binder, entrainment monitoring has been an aspect of all the nuclear power plants. As pointed out, it's --

THE PRESIDENT: I'm talking about the authorization requirement. The authorization required came I thought a bit later on. Okay, maybe we will check out this later on, unless somebody has the answer. Does anybody remember whether the authorization requirement process started relatively recently? DFO, can you --

MR. FRAPPIER: Gerry Frappier. I'm sorry, sir, I was going to say that we do have somebody in Ottawa who can answer that.

THE PRESIDENT: Go ahead.

MR. FRAPPIER: Caroline Ducros, please.

DR. DUCROS: Dr. Ducros, for the record. Can you hear me?

THE PRESIDENT: Yes, we can. Go ahead.

DR. DUCROS: I think what you are referring to are amendments to the *Fisheries Act* that took place in 2013 which changed one of the sections of the -- in fact it conglomerated two sections of the Act to a single section 36 about death to fish and that's what

started the ball rolling for entering into the Memorandum of Understanding between Fisheries and Oceans Canada and Canadian Nuclear Safety Commission.

And so that Memorandum of Understanding, just for the record, is scoped for that section of the Act and not for the deleterious substances section, not for section 36. And it doesn't remove the accountability of the Minister from making a decision on *Fisheries Act* authorizations.

THE PRESIDENT: So I'm not crazy, okay.

DR. DUCROS: So I believe that there were previous --

THE PRESIDENT: Okay. Thank you.

DR. DUCROS: Pardon me. There were previous amendments to the *Fisheries Act* that introduced the habitat provisions and DFO might be able to say the year of that. I believe it was in '86, but I'm not positive.

THE PRESIDENT: Okay. Thank you. Thank you very much.

Ms Penney, you had another question?
Anybody else?

Okay, you can rebut and finalize.

MS FEINSTEIN: Thank you.

So there are a few points that I would

like to make before I make my closing statements.

The first concerns OPG's assertion just now that there is no evidence to suggest that groundwater is leaking into the stormwater infrastructure and I would point the Commission to the part in Mr. Ruland's expert study in which he talks about values of 39,000 Bq per litre measured in the stormwater infrastructure. So it's a concern if the source of such high results are the product of surface contamination.

And then I would also stress that it's not up to the intervenors to establish that in effect there is groundwater leaking into the stormwater infrastructure due to the precautionary principle. So if there is a fact such as this highly elevated value of tritium in the stormwater infrastructure that causes a reasonable suspicion that there may be infiltration from groundwater, by which point the precautionary principle in environmental law should take over and require an investigation to determine what exactly is happening.

And that highlights the difficulty when you have gaps in actual monitoring of stormwater three to eight years long. That doesn't allow for any meaningful kind of follow-up to really get down to the bottom of why some stormwater contaminant values are so extremely elevated.

With regard to the *Fisheries Act* authorization and the discussion that we had just now, it is very concerning that the first time the Pickering Nuclear Generating Station ever received a DFO authorization was in January of this year when the *Fisheries Act* itself is one of the oldest pieces of Canadian legislation. It has prevented destruction of fish and harmed habitat for decades. So the fact that this facility was able to operate without any kind of authorization is extremely troubling.

And also the fact that there has really only been one entrainment study for the facility is also deeply concerning, because again, how are we to know that this facility is complying with the Act. Of course there was a change to the Act in 2012, but it didn't change the protections in the Act. Yes, it gave the CNSC more authority to administer and ensure enforcement of the Act, but the Act has been relatively unchanged for decades and decades while the Nuclear Generating Station has been operating.

And the final I suppose rebuttal or point that I would like to make before I go into my closing concerns the Ontario Ministry of Natural Resources' contention that it is appropriate to look at lakewide impacts on fish to determine whether or not the Nuclear

Generating Station has an acceptable level of environmental risk. I would direct the Commission to page 25 of Dr. Henderson's report in which he explains in more detailed terms why a lakewide approach is insufficient in this circumstance, partly because Lake Ontario is quite a unique lake, it is deeper than many of the other Great Lakes and its shoreline habitat is, as a result, much smaller. So the ecological significance of shoreline habitat is especially important in Lake Ontario. It is also the area of the lake that is experiencing the most stresses due to increasing urban populations. So just looking at a lakewide -- just using a lakewide perspective is insufficient. And he has many more arguments concerning that specific issue that I would hope the Commissioners would look at.

That being said, I do have one clarification also concerning again going back to access to information on the public record. In arguments in favour of a 10-year licence hearing, both CNSC staff and OPG seemed to imply that these types of hearings are an inconvenience, taking staff time away from more important tasks and creating regulatory uncertainty. I would direct the Commissioners to the first part of our written submission that provides rebuttal arguments for that, highlighting the importance of participation by members of

the public and specialized civil society organizations. And the CNSC's own Participant Funding Program recognizes the value-added contribution that interventions can make and the importance to have regular hearings in order to facilitate that kind of informed public debate and scrutiny.

When considering public information disclosure, it is very detrimental to think of the public as a single homogeneous body. The residents who are living in close proximity to the plant lead very busy lives, they can't be expected to retain hydrogeological experts, fisheries experts to understand how their neighbour impacts their environment. They shouldn't be expected to. That's when civil society organizations come in like ours. And we are able to hire the experts, we are able to develop institutional expertise to make sense of the information that's provided, and then also share that information and form an educative role for the general public. So I urge the Commission to keep in mind and I urge OPG and CNSC staff to keep in mind the distinctions of the different types of public and the value of their different types of interventions as well. Obviously, people living in direct vicinity will have lived experience of what it's like to have the plant as a neighbour and that is very valuable as well. But when looking at disclosure --

THE PRESIDENT: So, as I mentioned many times if you listened to the last few days, we value public hearings. We value them, otherwise we wouldn't hold five days right here in Pickering. And we have exercised them and will continue to exercise them as required.

MS FEINSTEIN: Thank you. And I am grateful for these opportunities. I am concerned that they are only going to be happening once a decade rather than the 3 to 5 years that they had them back in the past.

THE PRESIDENT: And again, this is a misconception. We can hold them as often as we want. Even within a 10-year licence there is no prohibition from holding a public hearing.

MR. JAMMAL: Mr. President, it's Ramzi Jammal here.

I know you want to close, but I really object to the fact of the declaration being made that it's inconvenient for staff to be engaged in a public hearing. For the intervenor to know that we were asked internationally multiple times with respect to the PSP and added value. When we speak on behalf of Canada, we do give examples of our intervenors who add value. However, to say the fact that it's inconvenient for us to conduct public hearings is completely unacceptable, if you allow me to use such words.

And Mr. Stensil, in his testimony before you, mentioned the fact of cross-examination, but I can tell intervenors, on an annual basis you can read the transcripts, you can intervene in writing and extract from the transcript any issue that you want us to address on this basis. So the public proceedings at the Commission are one of the most transparent in the whole world. As a matter of fact, we get good practices internationally with respect to public hearings. So it is not inconvenient for us. However, there is a risk-informed decision-making process based on international benchmarking. Thank you.

THE PRESIDENT: Okay. Please --final remarks, please.

MS FEINSTEIN: I would direct the Commission to Waterkeeper's submissions in the SRB hearing where we provided more fulsome arguments concerning the differences between annual meetings and hearings and also where we were funded at that hearing to provide expertise specifically with regard to the types of hearing that are most useful to civil society organizations and the frequency in which we recommended that they occur. So I understand that we are running out of time and I do want to respect the other intervenors, so I will provide my closing statements at this point.

The Pickering site is located in an

ecologically stressed but resilient part of the northern shoreline of Lake Ontario. Recently this area has been the focus of increasing remediation and conservation efforts, especially concerning various ecological features in this area that are unique in North America.

The Pickering site is surrounded by parks to the west and north, wetlands to the east and the lake to the south. Conservation areas, beaches, fishing and paddling spots and trails also surround the site, as well as Ajax's drinking water intake, which is located just west of the site. Of the 90 aquatic species present in Lake Ontario, 60 have been found in the vicinity of the Pickering Nuclear Generating Station, including species at risk and of concern such as sturgeon, American eel and Atlantic salmon.

As urban populations around the Pickering Nuclear Generating Station continue to rise, members of the public will become increasingly dependent on the lake and the lake shoreline for sustenance and recreation.

I should emphasize again that there is a lot of uncertainty concerning the Pickering Nuclear Generating Station's impact on the local environment due to lack of information on the public record.

The federal government's open data initiative, which extends to the CNSC and explicitly seeks

to promote greater transparency in the energy sector and scientific fields, requires proactive disclosure of data in accessible formats, recognizing that this is in the public interest. Access to information, including environmental monitoring data and raw data in machine-readable formats released in real time, is also a crucial prerequisite to Ontarians' right to a healthful environment in Lake Ontario, as recognized in the province's *Environmental Bill Of Rights* and *Great Lakes Protection Act*.

Further, as Commissioners, the dearth of available objective evidence-based and supportable information concerning the nuclear station's environmental performance impacts your ability to meet your due diligence obligations. Waterkeeper implores the Commission to require, rather than simply recommend, more disclosure from OPG and CNSC staff in order to facilitate accountability, transparency and the level of public scrutiny we all deserve.

The Commission has the opportunity and the duty to protect this area. You have had extensive testimony regarding the public concern for the environment, different kinds of hypothetical accident scenarios. These are very important to keep in mind. And just as important are the real concerns of the environmental performance of the Pickering Nuclear Generating Station in the here and

now.

We request a licence period of no longer than two years, over which period OPG and CNSC staff and others should be ordered to collect and disseminate information, including raw sampling data, that can demonstrate the facility's ability to make adequate provision for the protection of the environment. This additional material must be made publicly available and subject to a fulsome relicensing hearing that facilitates public comments on the merits of OPG's application, something that has not been completely possible under the limitations of this current proceeding.

I will end there, but before I leave I do want to wish President Binder a relaxing and restorative retirement and I look forward to continuing to appear in front of the Commission under Member Velshi's presidency. Thanks very much for listening to me today.

THE PRESIDENT: Thank you. Thank you very much.

We are going to break now for 15 minutes. We will come back at 10 to 11:00.

--- Upon recessing at 10:31 a.m. /

Suspension à 10 h 31

--- Upon resuming at 10:52 a.m. /

Reprise à 10 h 52

THE PRESIDENT: Okay, we are ready to proceed. Please sit down.

So the next presentation is by Registered Nurses' Association of Ontario, as outlined in CMD 18-H6.66. I understand that Ms Jackson will make the presentation.

Over to you.

CMD 18-H6.66

Oral Presentation by

Registered Nurses' Association of Ontario

MS JACKSON: Good morning, President Binder and Members of the Commission.

My name is Beatriz Jackson, and I am a board member of the Registered Nurses' Association of Ontario, or RNAO. I represent RNAO's region 8, an area that includes Durham, Northumberland, and the nuclear reactors of Pickering and Darlington. I have lived in Pickering for 22 years now, just 10 kilometres from the nuclear plant.

With me today are Susan Munro,

representing RNAO's Ontario Nurses for the Environment interest group, and Kim Jarvi, RNAO's senior economist.

We thank the Canadian Nuclear Safety Commission for this opportunity to respond to the renewal application for the Pickering Nuclear Generation Station's operating licence.

The issue of nuclear power matters a great deal to nurses because of its potential health implication and because nurses would be heavily involved in any disaster responses.

RNAO is here to speak to the Commission's mandate to regulate the nuclear industry to prevent unreasonable risk to the environment and to human health. We urge the Commission to adopt a precautionary approach that prioritizes human health and public safety. A precautionary approach is warranted because the Pickering nuclear plant is just five kilometres east of Toronto. If there was a major accident, evacuating an area of 20 kilometres around the Pickering plant would affect 1.3 million people, and if you extend that evacuation zone to 30 kilometres, 2.2 million residents in the Greater Toronto Area would be affected.

To put this into perspective, there were only 160,000 people evacuated as a result of Japan's Fukushima disaster, even though there was 20 kilometres'

evacuation order and the voluntary evacuation in the 20 to 30 kilometres from the plant.

To offer further perspective, the Chernobyl exclusion zone covers about 2,600 square kilometres, over four times the area of the City of Toronto.

As the Greater Toronto population continues to grow, so will the number of people at risk in the event of a nuclear accident. We know the risk of nuclear accident is not zero. There are only about 450 operable nuclear reactors in the world, and already one blew up in Chernobyl and three reactors sustained major damage at Fukushima. And there have been a number of other partial meltdowns.

The effects of an accident extend beyond immediate and long-term effects of exposure to radiation. The World Nuclear Association cited over 1,000 deaths directly attributable to the inadequately planned evacuation around Fukushima, particularly for vulnerable communities.

In Ontario, there are approximately 30,000 hospital beds. In the 20 [sic] kilometres area, greater than 7,000. This is equal to one-fourth, almost one-fourth of the Ontario beds. Within 30 kilometres of Pickering, we have 22 hospitals with 7,399 beds, and 82 nursing

retirement and nursing homes with 9,368 beds. So if we take 7,000 beds out of the circulation, it equals 23,000 beds, and they need to accommodate this 7,000. So one half of the beds would need to be emptied. Where and how? This does not even include retirement and nursing homes.

So excellent disaster planning is essential and would greatly reduce the risk of illness and death from evacuation. But it cannot be eliminated.

Furthermore, a major Pickering release could compromise the drinking water from Lake Ontario, and that is the source of drinking water for almost half if not all Ontarians alone, not to mention many residents in the New York State.

Finally, a major release of long-lived isotopes would contaminate hundreds of square kilometres of this densely populated area and would cause huge economic and dislocation for decades or longer. This will have enormous health consequences.

Now my colleague Susan Munro will complete presenting our submission.

MS MUNRO: Thank you.

When weighing the renewal of the Pickering licence, the following must be considered:

- The risks of disaster on an aging nuclear plant which are not diminishing and are difficult

to quantify.

- Pickering continues to produce nuclear waste which must be stored in perpetuity.

- In 1971, the Pickering station was designed to last until 2001, so it is far past its designated lifespan.

- Ontario has surplus generation capacity which leads to curtailment of wind generation.

- And the Environmental Commissioner of Ontario noted the province largely abandoned renewable energy options in favour of nuclear power without any apparent long-run cost advantage.

RNAO questions whether the power from Pickering is even necessary, and if so, whether some or all of it is necessary to 2024. If Pickering power is not all surplus, we ask if it can be justified on an economic basis, when one includes the cost of maintenance and repair and of adequate nuclear emergency preparedness. There are renewable and conservation alternatives, as the Environmental Commissioner noted.

Most importantly, we ask whether it makes sense to operate an aging nuclear plant adjacent to a large and growing population when the expiry of the current much-extended licence would solve the problem.

RNAO urges a precautionary health-based

approach to the Commission. With the health of so many people at stake, and having witnessed how wrong things can go when accidents happen, as they did in Chernobyl and Fukushima, a precautionary approach to emergency preparedness is a must.

Nurses want to know the system is fully prepared in the event of a disaster because we play leading roles in disaster response. RNAO welcome's Toronto's request to the Province of Ontario and to the Commission to strengthen Ontario's nuclear emergency preparedness. RNAO calls on the Commission to use any tools at its disposal to ensure that all nuclear plants in Canada, all emergency preparedness measures are world-class and designed to meet the need imposed by a Fukushima-scale disaster. It is very important to include RNs and nurse practitioners in the planning process.

In summary, we are not persuaded that extending the licence is the most cost-effective way of meeting Ontario's electrical needs and a precautionary approach to health leads us in the interest of preventing unreasonable risk to advise against extending the operating licence beyond what is necessary to safely decommission this plant.

As Fukushima and Chernobyl have shown, nuclear power is an unforgiving technology. But so long as

any nuclear power plants continue to operate in Ontario or elsewhere in Canada, we urge the Commission to ensure that all nuclear emergency preparedness measures are designed to deal with major disasters. This should include imposing licence conditions on Ontario Power Generation to address inadequacies in Ontario's nuclear emergency response.

The detailed recommendations number 13 to 31 to the Commission on emergency preparedness by CELA, the Canadian Environmental Law Association, provide the kind of precautionary approach we seek. Those recommendations include comprehensive planning in greatly expanded nuclear emergency zones to respond to major radiation releases; ensuring protection of vulnerable populations, which would include pre-distribution of KI pills to guarantee quick access; and public awareness campaigns to support the above measures.

Thank you for this opportunity to present the concerns of Ontario's RNs, nurse practitioners, and nursing students. We would be pleased to answer any questions.

THE PRESIDENT: Thank you. I'd just like to situate -- have you been listening to what's going on for the last five days?

MS JACKSON: Parts of it, yeah.

MS MUNRO: Parts of it.

THE PRESIDENT: Okay, so you know many of those issues were raised and discussed at length.

MS JACKSON: Yes, some of them.

MS MUNRO: Some of them, yeah.

THE PRESIDENT: I want to make sure that you're aware.

Okay, questions. Who wants to start?

MEMBER BERUBE: I'm curious. Do you have any data on how many acute care beds are within the 10-kilometre radius?

MS JACKSON: Beatriz Jackson, for the record.

Our records show that there are in the -- it's not 10 kilometres, but 30 kilometres. So that's what I have in here. There are about 22 hospitals with 7,399 beds. That's acute care, that is the hospital beds. And we have 82 nursing homes and retirement homes with 9,368 beds. Thank you.

THE PRESIDENT: And I assume they're pretty fully occupied.

So you expect -- so again, in the plan, there's a lot of expectation for evacuation in a severe accident. So are all hospitals aware as to what will be required of them in terms of dealing with people who require attention?

MS MUNRO: Sue Munro, for the record.

I think our concern is there may be some plans in the immediate area, but I don't think enough attention has been spent and addressed to the volume of patients.

Now, I come from the Quinte area, and I for a number of years managed what was called patient flow for a four-bed hospital -- or four-hospital site. And it's a challenge daily to get those patients in. So if you need to bring 7,000 patients from across the province, I'm wondering why this isn't, you know, an all-in provincial plan, because that's a lot of patients to move into other areas.

And again, when Betsy talked, it was to do with hospital patients. We've got all those retirement home patients. And given this vulnerable population, you can't put them in a gymnasium someplace. You have to have the nurses there. You have to have the resources there to look after it.

And it's good to say an accident won't happen, but as nurses we want to know what is the plan. What's the contingency, here.

THE PRESIDENT: Thank you.

Questions? Dr. Demeter.

MEMBER DEMETER: Thank you for your

intervention, and I acknowledge the vital role that nurses and nurse practitioners make on the front lines.

I'll stick with the -- we'll work in and then go out, and I gather the Office of the Fire Marshal is not here anymore, are they? Okay.

So I'll ask OPG for the health care facilities that are immediately in either the detail or the contingency planning zone, what support has been provided to them relative to staff training, ability to receive individuals that may need to be assessed and treated? Health Canada is sometimes involved with their METER training course, but maybe give me a snapshot of in the immediate area what resources and strategies have been utilized to help those centres. And is there a designated host or number of hospitals that are sort of on the first round?

MR. BURNS: Scott Burns, for the record.

So as mentioned yesterday, the off-site authorities rest with the provinces and municipalities, and unfortunately, they're not here to comment on that.

And also mentioned, so in the incident of an emergency, the Province has the authority to give directional orders to services across the province. So not just the designated municipalities, but support municipalities. So if the capacity cannot be served in the

designated municipalities, they'd be ordering the support municipalities to assist with any evacuation.

So we do have agreements with the local hospitals in the Durham Region. They do have their own nuclear response plans, and they were part -- one of those hospitals was part of our exercise, Exercise Unified Control. So and then it would be if there was any action required, that direction comes out of the Provincial Emergency Operations Centre to the designated municipality emergency operations centre to executed under the local health officer. The ultimate direction comes through the Ministry of Health and Long-Term Care with respect to those patients through the PEOC in the event of an emergency.

MEMBER DEMETER: And for the intervenors, maybe yourselves or your members, have they discussed with you the type of training preparedness they've gotten relative to their role, should it happen, from a health-care facility point of view?

MS JACKSON: Thank you for the question. Beatriz Jackson, for the record.

I have spoken to several members of our chapter. So we have the Durham Northumberland chapter. And there's no specific to the nuclear preparedness responses that nurses do in that -- in some of their institutions. We have sort of a bit, like what to do in a

response if there is an emergency, but not specific.

This is just an example of I lived the experience during SARS, and I work in a big hospital downtown. And it was -- there were no policies with regards to that, and it was just at that moment everybody works together, and let's do this, to the point that where nurses are put into the situation to rise to the occasion. So we just help each other.

But in this scale of if that is going to happen, like we as nurses, we rise to the occasion. But what do we -- what is actually there? We want to be prepared. Our nurses want to be prepared. We want to be trained. We want to do the -- like how do you decontaminate properly? How do you assess patients? How do you triage patients in this 10 to 20 kilometres? Where do they go? Where are the staff? Who are the staff that would do that there?

Pickering is actually a bedroom community for people, for nurses. They live -- they work downtown. So their choice is to get their kids wherever they are, to go home, or to stay and work -- volunteer to work here.

So that is where we wanted to -- we want that proper -- for nurses to be, This is what's going to be -- the patients going to be, we have enough support for nurses to go and help. Because we are going to be there.

That's the reality. Nurses are going to be at the front line, taking care of patients, evacuating.

It's not just an evacuation. We are evacuating very sick people, okay, with multiple disease conditions, okay. Plus put something that is -- that we put into the isotopes and that's happening, like it's -- I look at it as chaos.

MEMBER DEMETER: So you're --

MS JACKSON: Forgive my -- thanks.

MEMBER DEMETER: You're a very large organization. I don't know what your membership number is, but I suspect it's -- 41,000?

MS JACKSON: Yeah, 41,000.

MEMBER DEMETER: So is your organization officially involved with the PNERP planning process? Are you at the table? Can you share these concerns with them? It seems to be you're a major stakeholder.

MR. JARVI: Kim Jarvi for the record.

We're engaged in emergency planning, but I'm not aware of our being engaged with respect to nuclear planning. I'm not aware of it. And if something -- if that has -- if such engagement has happened, it's beyond my -- it hasn't -- I'm not aware of it. I'm sorry.

MEMBER DEMETER: I don't know if -- because the Office of the Fire Marshal is not here, but

if -- does someone have an understanding of the PNERP process? This technical report that's coming up? Opportunities for public input? That might help me -- I see a potential disconnect here.

MR. FRAPPIER: Gerry Frappier, for the record.

I'm not sure we can completely answer the question, but I would ask Richard Tennant who participates in some of these committee works that we have been talking about, if he has anything to add to how the medical, I guess doctors, nurses and that, how they participate in PNERP development I think is the question.

MR. TENNANT: Richard Tennant, for the record. I'll first start by saying that the emergency plans and procedures are aligned with international OPEX and guidance. For example, the lessons learned from evacuation in Fukushima have been strongly considered by planning as we made the new PNERP and other emergency plans.

With respect to training, I can certainly reference the METER training which was already referred to, that is offered by Health Canada. METER training is medical emergency treatment for exposures to radiation. That is available, I think you can find that online and Health Canada can certainly add to that if they are online.

With respect to the province, the province had a radiation health response plan which is overseen by the MOHLTC. I have looked at -- I have seen the plan, I haven't looked at it recently, but that that is where they address the evacuation and the medical triaging and treatment.

But from a CNSC point of view, we don't go too, too into depth in that because we're starting to get into the realm of healthcare, which is certainly outside our expertise.

THE PRESIDENT: So, again, we understand the theory; we understand the regulatory requirement, what we don't yet got is the detailed plan on execution and that's something that, Mr. Jammal, you promised together with OPG will be developed.

And, you know, just to understand, in a Doomsday scenario pick up our host community, somebody mentioned Peterborough. So, who in Peterborough is aware that they are the host community; are they trained, are there nurses in Peterborough, where is the hospital, which one. Just a little bit more the detail.

I understand that we have Health Canada, Mr. Buchanan, that wants to share with us some thought. So, now is the time. Please proceed.

MR. BUCHANAN: President Binder, Kevin

Buchanan from Health Canada. So, I wanted to talk a little bit about the METER training and a few other points here that will feed into the discussion.

So, the METER training is something that Health Canada offers to hospitals, first responders in that community in the zones that would be affected by a nuclear emergency.

So, I'll just talk a bit about the program. The Medical Emergency Treatment for Exposure to Radiation, that's METER, so that's a course that's been designed to enhance the medical community's preparedness in responding to a radiological nuclear event. So, the course is designed for first receivers, so that's emergency room physicians, the triage nurses, emergency room nurses, radiation safety officers, nuclear medicine personnel, emergency management coordinators, planners, trainers and first responders, paramedics, fire and police, and all of these communities have been represented in recent courses that we've delivered.

Included in this course are topics such as radiation basics, radiological events requiring medical response, the Federal Nuclear Emergency Plan, regional nuclear emergency plans and arrangements, radiation biology, managing acute radiation syndrome, treating radiation injuries and internal contamination, radiation

detection and instrumentation and the use of personal protective equipment. All of which is available within our current hospital settings right now.

So, the important point is that they all have this approach that hospitals use right now doesn't need to be re-thought or re-configured for radiation emergencies. It's really just an application of the current tools that they have to deal with similar situations that they deal with every day, but applying those in a contaminated setting, right. And it's really just education that needs to occur to properly prepare these organizations for what they'll be faced with.

So, we've mentioned that we do deliver that course. Communities have to ask for those courses. We go out -- recently in the Bruce and Kincardine for -- I forget the name of the exercise that occurred two years ago -- in concurrence with the running of that exercise, we had run the METER course with the local designated hospital in that designated municipality.

We're also going up to the Petawawa/Chalk Lake -- Chalk River area later on this year to do a similar thing for that designated healthcare facility.

So, a point I'd like to make is, is that beyond the in-house training sessions that we're prepared to deliver, this also exists online. It also exists online

and I think it would be prudent for everyone within those communities to familiarize themselves with the contents of that course if you happen to be in one of these planning zones that is identified within the PNERP.

I'm just going to follow up by reiterating something that I have brought up before, President Binder, and this is a re-confirmation that Health Canada does believe that the current version of the PNERP, if executed as intends, represents a substantial improvement over previous versions, right.

And it's important to understand that the designated contingency planning zone that is newly introduced into the plan represents a significant improvement, it's in line with IAEA's standard, but we need to make sure, and Health Canada would expect, that everyone would ensure that the protective actions called for within the zone are consistent with the hazard assessment and they are implementable and executable. And implicit in this is the understanding that the protective actions taken in the detailed planning zone may be extended to the contingency planning zone. This may include protective actions such as evacuation and pre-distribution of KI as per REGDOC-210.

Thanks, President Binder.

THE PRESIDENT: No, thank you for that. And again, that's the thing, that we're not arguing now

anymore with the frame, we are trying to find out what the execution is all about and are you familiar with this course that Health Canada is providing, and if you're not, then there is some disconnect here.

Health Canada just found out 40,000 interested possible trainers that you may want to consider reminding them about this course availability, particularly online. So, you can actually do that.

Dr. Demeter?

MEMBER DEMETER: Just a closing comment. I'm also looking forward to seeing the detailed plans relative to -- details for either shelter in place, which a lot of times is the most appropriate thing to do, especially relative to healthcare facilities or evacuation of healthcare facilities as the PNERP report gets more detailed.

But I hear your concern for that. It's not a small matter to evacuate a hospital and I understand that those details need to be worked out.

MR. JARVI: If I may, Kim Jarvi, for the record. We're concerned about detailed planning taking place outside of the detailed planning zone and I didn't hear that being in the offing and it's going to have to be quite extensive, go far beyond because you're going to be receiving -- you could be receiving people who are

evacuated from quite some distance.

And so, it's good that there's certain training programs, but there has to be an entire plan.

MEMBER DEMETER: I also concur that the large PNERP plan has to include transitions for all those people that may go outside of the detailed and contingency planning zones because there might not be enough room or it may not be appropriate to transition them that close.

So, the final document hopefully will contain all the details that I want to see as well.

MR. JARVI: And we hope that you consider the level of detail that's suggested perhaps in CELA's comments, recommendations on planning zones.

THE PRESIDENT: I think what OPG and all the parties -- Office of the Fire Marshal, et cetera -- they've now struck together a committee to try to come up with those detailed plans for all the zones, all the way to, for evacuation and ingestion of KI pills, et cetera, et cetera.

So, we expect annual reports on progress on this.

Question? Any more questions?

Okay. Any final thought you want to share with us?

MR. JARVI: Oh, sorry, go ahead.

MS JACKSON: Beatriz Jackson, for the record. Just before Kim would give his final thoughts, this is just a personal thing for me, if I may, because I live in the 10-kilometre radius.

When we moved to Pickering, I've lived there for 22 years now. When we moved to Pickering it was fairly new, new plant. We moved there because of many factors such as affordability, accessibility to schools and to work.

Later on as -- we were there for 22 years, my kids have grown up, I know where to take my kids where they're supposed to be and we were informed and we had KI pills.

Now that I -- you know, it's over that lifetime for that plant. I am very scared, not only for myself, my family but the communities and the people around the community. It is scary to think about that personally, but as a nurse, like I have to know what I have to do, what we have to do for the community.

And due diligence has to be taken into consideration. We have to think about the people within the community. It's not just thousands, it's millions of people in that community, and we are -- if that time comes, we will be evacuating a lot of people, a lot of children and a lot of, you know, lives are affected.

Thank you.

MR. JARVI: Kim Jarvi, for the record. If I may, before I make my final statement I'd like to read the statement that we signed onto, a call for public safety addressing nuclear risk on the Great Lakes.

We had -- there are nine recommendations. Number one, base protective measure on a Fukushima scale accident, INES 7, including alerts, KI presentation-distribution and preparation of evacuation zones of 20 kilometres or greater;

Two, prepare for full health support for all displaced populations, including health practitioner staffing and ---

THE PRESIDENT: All your recommendations are in your appendix.

MR. JARVI: Okay.

THE PRESIDENT: They are on the record. You don't have to.

MR. JARVI: Okay.

THE PRESIDENT: We all read them, so you don't have to read it in, but if you have some conclusions --

MR. JARVI: Yes.

THE PRESIDENT: -- or concluding remarks, please, now is the time.

MR. JARVI: Sure. There is a small but non-zero risk of a major release in this densely-populated area, so it's essential to have detailed planning over long distance for evacuation, relocation and support, for protecting vulnerable populations including the pre-distribution of potassium iodide pills, and an active public awareness campaign that will save many lives in the event of a major release.

We are gratified to see that the CNSC has been very attentive to this imperative, but we can't avoid all mortality morbidity that would arise from a catastrophic release. You could be facing exposure to persistent radiation, depending on the kind of radiation is released. There will be the physical dislocation associated with even the best planned evacuation and relocation.

And in the event of long-lived isotopes being distributed widely, you could have economic dislocation of large tracts of formerly densely populated areas, and that's going to cause major health problems, especially in terms of health will enter there in a big way.

Accordingly, we submit that health protection is better served by transitioning away from this inappropriate site for nuclear power. It's just in a

densely-populated area.

Thank you very much.

THE PRESIDENT: Thank you.

MS MUNRO: Susan Munro. I just have one little caveat at the end.

Doris Grinspun, our CO of RNAO, said that it doesn't matter whether policies fail, nurses are there, and we will be there. So just to let you know that.

THE PRESIDENT: We all know that, and we are counting on you. You will rise to the occasion, right?

Thank you.

We have one more intervenor, Marc?

MR. LEBLANC: Well, that's correct. Yesterday, we accepted that Mr. Kalevar will present this morning instead of yesterday because he had some transportation challenges. And this morning he did not show up. He told us he would try to be here and if he couldn't, then we would refer to his CMD as a written submission. So that's what we'll do right now.

So if the Members want to go to CMD

18-H6.136?

CMD 18-H6.136/18-H6.136.A

Oral presentation by Chaitanya Kalevar

MR. LEBLANC: Then I am going to ask if there is any question on this intervention.

THE PRESIDENT: Not for me. No?
No.

MR. LEBLANC: So there is no more questions. This is the end of the interventions, Mr. President.

So do you want to proceed with the rounds of questions right now?

THE PRESIDENT: Yeah, I will start with -- I'm taking two minutes because I have got to get -- okay, I need to get my book.

So we are now into the final round of questions. We will go around for as many rounds as we need. Who is ready and willing to start?

Ms Velshi...?

MEMBER VELSHI: Thank you, Mr. President. I think we've covered so much ground so I only have some small, short questions just to make sure that there is clarity and completeness of the record.

So my first question is around the integrated improvement plan and the licence condition

handbook around that. So this is LCH 15.1. We don't need to go to that. I'll just tell you I've got three parts to my question, the first one to OPG.

You are expected to complete the entire plan by the end of 2020, according to the LCH. So have you already started implementation?

MR. LOCKWOOD: Randy Lockwood, for the record.

Yes, we've already started. In fact, we're on track right exactly where we should be at the end of June. To give the Commission some idea, 13 of the 63 IIP actions are complete already, 27 of that 63 are already in progress, and so there is the additional not started but we're exactly where we should be.

MEMBER VELSHI: Very good. And what's the dollar value of the investments associated with that, just to get a sense of the scope of it?

MR. LOCKWOOD: Randy Lockwood, for the record.

I'm not sure I could break it right down by the IIP, but I would share with the Commission there's approximately \$300 million set aside to extend operations past 2020 to end at 2024.

MEMBER VELSHI: And the LCH identified a number of high-ranked committed actions, so maybe of your

list of 63, and I didn't see fueling machines in there, and given our status report and some earlier events that we have had about fueling machine issues, is that one of the 63?

Is it a big enough concern as far as operability? I'm sure not so much on the safety side. I just wondered from the operability side.

MR. LOCKWOOD: I don't recall fuel machines. Randy Lockwood, for the record.

I don't recall fueling machines as part of the IIP, but we do have a substantial improvement program underway. It's currently underway to improve the reliability of the fuel machines. In fact, a good -- a rather large sum of money has already been spent and we're seeing the benefits of this improved reliability, pardon me, and we're going to go forward.

I'll let Jason just speak to some of the details.

MR. WIGHT: Jason Wight, for the record.

Just to clarify, so the fuelling machines primarily operational issue. So with regard to the PSR IIP, we don't have significant improvements, just to clarify.

I can talk a lot about our fuel handing reliability program.

MEMBER VELSHI: Thank you.

And the last part is for the CNSC, if you can quickly go over what any changes to the IIP would trigger, and also what would constitute a change.

MR. FRAPPIER: Gerry Frappier, for the record.

So the IIP, depending on the decision of the Commission, would be part of the licence, and be considered part of the licensing basis. If there is any changes that are going to be made to the IIP or that have been requested to be made on the IIP, then those would be brought to the Commission for the Commission to determine whether that's appropriate or not. There is no room for anything other than that.

MEMBER VELSHI: Will that include even the implementation date?

MR. FRAPPIER: The dates that are put into the IIP are dates that would be part of the licensing basis.

MEMBER VELSHI: Thank you.

THE PRESIDENT: Questions? Dr. Lacroix...?

MEMBER LACROIX: Thank you, President Binder.

In document CMD 18-H6.C on page 35 -- and

my question is directed to CNSC staff -- the recommendation --

MR. LEBLANC: Excuse me, Dr. Lacroix. Just give people the time to find the document because you know where you're going but --

MEMBER LACROIX: Okay.

MR. FRAPPIER: Which document was it again, sorry?

MEMBER LACROIX: Yeah, CMD 18-H6.C, the very last document that you submitted to us.

On page 35 among the recommendations --

THE PRESIDENT: This is staff deck?

MEMBER LACROIX: Staff document, yeah. Page 35. The title of the slide is "Recommendations (1/2)".

--- Pause

MEMBER LACROIX: You got it? Okay.

It says that:

" CNSC staff recommend that the Commission:

3. Authorize delegation of authority for a person authorized by the Commission for... restart after a serious ... failure".

Now, if you take document H6.B, the

previous document in the licence condition handbook on page 55.

You got it?

THE PRESIDENT: Licence condition --

MEMBER LACROIX: The licence condition on --

THE PRESIDENT: -- 55 out of --

MEMBER LACROIX: It's on how to manage performance. That would be in the SCA Operating Performance.

Have you got it?

It says that CNSC Staff located at the site offices should be invited to the restart meetings in order to verify that all appropriate reviews for restart of the reactor have occurred.

Now if I put these two statements together, I do not reconcile the fact that the word "should" is used.

Should it not be "must" or "have to" or is there a reason for using this word "should"?

MR. FRAPPIER: Gerry Frappier, for the record.

First they are not necessarily talking about the same reason for a unit to have come offline.

Outages can be planned on a fairly regular

basis, or are planned on a regular basis. So those are not the ones where by the recommendation for the designation of authority the Staff at restart are required.

The licensee is allowed to take his unit offline, do whatever he wants to do during the outage and then return to service.

The participation of the CNSC in that return to service is as described in this outage management.

And I will ask Mr. Ed Leader to add to that in a minute.

The piece that's being referred to in the presentation is when it was not because they planned to be on outage but when there was a major disruption of processes. So in that case the CNSC is now very interested in what was the reason for the loss of control, for the rationale?

In that case they need authorization from the CNSC because we're going to want to make sure that they have done the root analysis needed to understand the condition of the reactor before they would be allowed to restart.

But this one here that you are referring to, outage management, would be more in the sort of management of norm outages.

And I could ask Mr. Ed Leader to talk about from the site's perspective how they participate.

MR. LEADER: Ed Leader, for the record.

So for planned outages, as Gerry said, we have a well-established process for it. We have regular meetings with the outage managers and we are always invited. We are aware of the dates of these meetings and locations, and we will go. We don't need to be invited.

For the unplanned outages and similar decision-making meetings on any technical issues, there already is a process in place between OPG and the site CNSC Staff where we are informed of them, get the presentations in advance and attend, as required.

MEMBER LACROIX: Okay, that's great.

On the previous page, on page 54, it says that:

"Licensee shall ensure that all abnormal operational scenarios and licence design basis..."

And so on.

I'm curious about these abnormal operational scenarios. Is there a databank of these scenarios? Are these international benchmarks? How are they defined?

MR. FRAPPIER: Gerry Frappier, for the

record.

So in our categorization of procedures and processes for an operating reactor there is sort of normal operations and hopefully that's where we are all the time.

However, both in the design and in review of operating experience and that, there is a possibility that you would go abnormal operations; that something has happened that is not part of the normal operations. It's not an accident, it's not severe accidents like we've been talking about.

So then it's very important and one of the things that we undertake when we do safety assessments is to ensure that the licensee understands all those abnormal operations and how they're going to recover from them.

So that's typically part of our defence in-depth.

If you want some examples of those, perhaps OPG would like to add to that.

MR. GREGORIS: Steve Gregoris, Deputy Site Vice-President for Pickering, for the record.

The paragraph you are referring to refers to abnormal incident manuals and then emergency operating procedures.

The abnormal incident manuals are very specific for the special safety systems and the safety

support systems that are there to support any safety requirements during operation.

The aims define specifically equipment that needs to be available and for any pieces of the system, redundant pieces that aren't available, it defines the level of we call impairment, the applicable actions to take, the notifications and the requirements for repair and urgency of that repair.

So that is very specifically defined.

It will also define further actions as far as notifications and possibly safe stating either the system or the unit.

The emergency operations procedures are specific scenarios that have been analysed in the safety analysis and these emergency operating procedures have clear criteria to diagnose the condition. It basically follows the controlled coolant containment philosophy for actions to make sure the reactor is shut down, the fuel is cooled and then obviously anything is contained.

Some examples would be loss of coolant accident, main steam break, loss of feed water, loss of Class 4 power.

MEMBER LAXROIX: Thank you.

THE PRESIDENT: Questions?

Mr. Berube?

MEMBER BERUBE: It's been a long five days and we've covered a lot of ground. I think we've determined at this point that the event of a large accident would not be desirable for any of us.

To that point, the idea is to mitigate this from happening. I'm interesting in knowing what the EME deployment time is. And second of all, is that completely dependent on operators or do you have other people trained to do this as well?

MR. GREGORIS: Steve Gregoris, for the record.

The function of deploying the equipment, that is a shared function between the emergency response team that we have, so that's emergency response maintainers, which is basically our fire response unit, operators and maintenance people. That's a shared responsibility and they help each other to execute those actions.

As far as putting emergency mitigating equipment in place, we can have all the equipment in place within six hours.

MEMBER BERUBE: You have tested this several times to make sure that is in fact the case, somewhere in that window?

MR. GREGORIS: Steve Gregoris, for the

record.

In fact, this week, last week the operators were performing training to practise the operation, deployment and use of the equipment.

MEMBER BERUBE: The next set of questions, I have actually just one in particular that's very important.

As we know, as we move through transitioning from one mode of operating to another mode of operating, in this case going from normal operations, what you're doing today, into safe storage operations, the probabilities for error always happens when we do transitions.

So from my standpoint -- and I need to know this very, very carefully -- is walk me through that process again carefully.

What are the most important safety considerations that you have as you're transitioning from normal operations, shutting down the reactors and transitioning into safe storage mode?

MR. GREGORIS: Steve Gregoris, for the record.

I will start by saying that these operations that we're talking about are operations that we perform during outages. Some of them are online. Fuelling

is an online activity. We do these every day under our operating licence. We've done these activities when we've safe-stored Units 2 and 3, and we just performed these activities on Unit 2 to put it in the right de-fuel drain state for the refurbishment.

So essentially we take each unit and per procedures reduce power down to low power, put each unit into a guaranteed shutdown state, is what we call it. So that's a state where basically the reactor is guaranteed to remain in a safe shutdown state.

Once we're in that position, we would move towards defueling the reactors. Again we have procedures to do that. We use those procedures in outages in the shutdown state and we have well-developed procedures. Our people are trained and we would start to defuel using those procedures.

All of the activities associated with transferring the fuel into the bays, those are all normal procedures as well. We would follow our normal processes. Obviously the level of activity would be higher but we are well trained and well capable of doing that.

Once the defueling is done, then we would move towards draining of the heat transport system and drying it in a moderator.

Again the procedures for the heat

transport were just used at Darlington. So some modifications for the Pickering system, valve numbers and so forth. But the draining is again well established.

We have very specific procedures that govern how we drain, what we're monitoring for, monitoring through the pipe lengths to make sure there is any kind of -- whether it's a leak that could develop or hazards. There's different corrosion products that can move down. There's all that monitoring in place.

We do that for moderator transfers right now. So those kinds of monitoring protocols are well established and well controlled in the plant.

The drying process we just used at Darlington, so we have that process well in hand.

And then the moderator draining is something we do in outages, the same kind of protocol for heat transport systems.

MEMBER BERUBE: Thank you for that. I'm comfortable with what you are telling me.

The issue is now of course we're going to move from the human factor side of the coin where you have normal operations, day-to-day operations, where people are conducting activities. And as soon as you transition into something they haven't been doing, human factor issues become a critical piece of this.

I'm sure you are well aware of that.

So can you walk me through the advance training that you are going to do with your operations staff to ensure that they are complying within the new procedures and that they are doing everything safely?

MR. GREGORIS: Steve Gregoris, for the record.

So we have I'll say a number of processes that we can put in place that would control evolutions, everything from a verbal pre-job brief to a written pre-job brief to what we call a Level 4 pre-job brief, which is much more enhanced with additional organizations or departments, work groups, along with oversight to an infrequently performed test or evolution, which has the highest level of oversight, the highest level of written, discussion, and challenge.

So we would invoke any of those processes in place prior to executing any of those evolutions.

Prior to that, we would typically, say for a moderator drain or a heat transport drain, we would actually go and practice that. We would practice it in the simulator if we could or we would practice -- we'd do a full walk down, some classroom training, going over all the operator experience we have, the procedure itself, some of the critical steps.

But we'd always come back to just prior, sitting down with the licensed shift manager, the person responsible for the plant and all operations that day, their crew, any other crews or departments that are involved in that evolution. They would sit down, go over that procedure with oversight at a senior level to make sure that procedure's understood, the training was completed, people are ready, they understand their roles, there's contingencies in place, there's back-ups in place, OPEX been reviewed, and there's a formal signoff that what happened in the highest case, the infrequently performed test or evolution to make sure that team is ready.

There's also, in the higher level approvals, there could be a higher level what we call Director of Operations and Maintenance, so the highest level approval in our operating policies and principles to actually allow an evolution to proceed.

Based on all of those things being done and that person being convinced, the team's ready to execute.

MEMBER BERUBE: Just a couple more quick questions. This is for executive management. Are you absolutely confident that your staff is capable of performing this work safely and securely?

MR. LOCKWOOD: Randy Lockwood, for the

record. Absolutely.

MEMBER BERUBE: CNSC, any concerns on any of this?

MR. FRAPPIER: Gerry Frappier, for the record. So, as mentioned, many of the important steps are things that are done at regular outages, certainly the fuelling and dewatering. We've also seen both G2 recently go through it, Darlington going through much the same steps, as was just mentioned, to do refurbishment, and Bruce has done it in the past, OPG has done it in the past.

So that first getting to a safe state is a pretty well-known process. I think the human factors aspect that you mentioned is important.

That's something we're going to be looking for in the SOP that we have talked about. If you want a little bit more on that, I could ask somebody in Ottawa to give some details on the human factors aspect.

So André Bouchard, if you could perhaps give us a little bit of preparation work that we're looking at from that perspective?

MR. BOUCHARD: André Bouchard, Director, Human and Organizational Performance Division, for the record.

The approach to human factors to decommissioning is known, there's a lot of OPEX, operating

experience, worldwide with that.

The focus really is to make sure that people and the procedures are right. We know of OPG's practices with regards to developing procedures, there's good standards into which human factors are well-considered, addressed. Procedures must be verified and validated from a human factor standpoint as well.

The bottom line, as well, is that the works need to be ready so that they can actually action those procedures even if, and especially for what we call the one-offs, those specific instances of work that were not routine.

So we are aware and also we're aware of the HF capabilities within OPG's organization, and we are practicing oversight to that capability so that these specialists within OPG are involved at the right time for those procedures and actions.

THE PRESIDENT: Thank you. Questions?
Dr. Demeter.

MEMBER DEMETER: Thank you. For the first question I'm referring to Staff's submission from Day 1, H6, and page 67, and I'm revisiting Table 8. I just want to get a bit -- it's CMS 18-H6, submission from CNSC Staff, page 67, Table 8, the maintenance backlog and deferral table. I'll wait until people get --

THE PRESIDENT: Well, if it's going to be a complicated table, I don't know if Staff can find it and put it on so we can see it? Because I don't have --

MEMBER DEMETER: Well, I'll drill down to the very cell that I'm looking at.

THE PRESIDENT: So you don't need to see the table in front of us?

MEMBER DEMETER: No, I don't.

THE PRESIDENT: Okay, go ahead.

MEMBER DEMETER: So Day 1 we confirmed -- we're looking at the trends in maintenance backlog for three indicators; corrective, deficient, and deferrals. We confirmed that it was per unit per quarter that time to help me understand it.

The last update was average work orders 2017 Q1-Q2, so I gather this is a calendar year. Is this correct, based on the way it's...? Are these calendar year?

MR. FRAPPIER: Gerry Frappier, for the record. I'd ask Eric Lemoine to perhaps come and help us get through the questions that you're going to have.

MEMBER DEMETER: Okay. So I'm assuming this is calendar year, even if it's fiscal. I just wanted to know if there was any update to the deficient maintenance backlog which had a trend of up since the 2017

Q1-Q2? Because that seems like it would be sufficient time since this quarter to see whether this indicator was still trending up or was...

Mr. Lockwood had talked a bit about -- I mean, it's backlogged before, but I didn't -- sorry if I forgot the precision of which one you were talking about, because it was in PROLs.

I just want to see what's happened with that trend, that's really all I want to ask. Maybe OPG can...?

MR. LOCKWOOD: Randy Lockwood, for the record. No, I totally understand, lots of numbers this week. I'm quite proud to say on behalf of our team, corrective maintenance backlog, just to back-up a little bit, at start of 2017 we had 120 work orders per unit. I'll tell you where we are now. Zero for the site. We've been there since the start of 2018. I'm proud to say, that's industry-leading.

Similarly, second priority, deficient backlog, we started this year -- I can't remember, but that's our priority this year, and we're currently at 12 work orders per unit, we set a target for year end of 15, but of course we're going to continue to drive that down to industry best.

Does that answer your question?

MEMBER DEMETER: Thank you very much.

THE PRESIDENT: Just so I understand the math, are those numbers per unit or total?

MR. LOCKWOOD Randy Lockwood, if I may. Maybe I should have more context, highest priority, corrective critical is at zero.

Next, corrective non-critical we've set a target for ourselves at 20 work orders per unit and we're at 24, so we'll continue to drive that down to industry best.

Deficient then breaks down similarly, deficient critical and deficient non-critical. Our focus is on deficient critical, and we're at 12 work orders per unit, and we've set a target at 15 for the year, so we'll continue to drive that to industry best.

MR. LEMOINE: Eric Lemoine, for the record, Director of Systems Engineering. Those numbers in that table are per unit, per quarter.

THE PRESIDENT: So that's what I understand, it was 127, the deficient for 2017. Q1-Q2 is 127 per unit, per quarter?

MR. LEMOINE: That's correct.

THE PRESIDENT: So now it's down to 20 --

MR. LEMOINE: Eric Lemoine, for the record. So OPG can speak more to this after. So just let

me define this a little bit better. So corrective means that the item cannot meet its design intent. Deficient means that there's a problem, but it's less important to safety.

So the industry follows INPO guidance in a definition of how you determine these. After, under corrective and deficient, you then have critical and non-critical. Of course, from our perspective, we focus more on the critical, but we get all the data as well. So we're tracking all the non-critical data as well.

Between Q3 and Q4 INPO changed their definition of critical and non-critical. So the reason for seeing such a large improvement is because a lot of those were redefined and placed in the non-critical category. Now, keep in mind that we've actually asked -- this is not specific to Pickering, this is industry-wide. In fact, includes not just the Canadian industry, but the U.S. industry as well follows this INPO definition.

So when we noticed that, because we get 3.1.1 quarterly reports where they send us all this data, we actually sent letters to all the Canadian licensees to explain to us, you know, what's going on, what do you think the safety implication is?

We've looked at this, we've done our preliminary assessment. Keep in mind, this is a little bit

hot off the press. This has only been in the last month or so that we've been looking at this. We believe, at this time, that this does not have a significant impact on safety. It's just re-categorization of the critical to non-critical.

So that's my understanding of why there's such a large drop in those numbers. Keep in mind, we saw the resultant increase in the non-critical as well, and we track that very closely as well to inform our compliance.

THE PRESIDENT: Okay. So for 2018, forget about the numbers, I cannot do the comparables, but are they getting better? That's the word we're looking to hear, in backlog.

MR. LEMOINE: Yeah. I'm not sure that we received that latest quarterly report yet for the 2018 data. We could go to Ottawa just to verify. So, Mr. Yong Chang Liu, have we received that data as of yet?

MR. LIU: Yong Chang Liu, System Specialist, for the record.

We just got 2018 Q1 quarterly report only from one station, Pickering. The other station has not been received from my side. Based on data we just had last week, yes, the Pickering overall backlog keeps trending down for both critical and non-critical.

THE PRESIDENT: Thank you.

Go ahead.

MEMBER DEMETER: This other question is a bit hypothetical and just to give me some assurances. One of the issues in Fukushima was that a lot of their backup power systems were compromised either by their location, subterranean, or literally being washed away. I don't assume we are going to have a similar water problem, tsunami problem here, but in the instance of inclement weather with tornadoes, what is the risk to your mobile backup energy systems, the trailers and the generators, relative to being able to supply energy in that scenario? I suspect that's the scenario you considered and what are the ramifications for being able to continue to supply power and pumping during a significant weather system such as tornadoes?

MR. GREGORIS: Steve Gregoris, for the record.

I am going to ask Jack Vecchiarelli to expand on my answer, but I do want to say that as part of the design of the station we do design for severe weather conditions and for example our emergency power generators are qualified for both wind and seismic conditions. Those emergency power generators would supply water and would supply electricity for monitoring functions particular to deal with those events. The equipment that we store is

stored close to the site but further away from the site, slightly elevated, secured down so that it remains intact under severe weather conditions as well.

And then I will ask Jack to expand a bit more on what I have said.

MR. VECCHIARELLI: For the record, Jack Vecchiarelli.

I just want to add to what Mr. Gregoris said in terms of the risk characterization of high wind hazards. This is part of the suite of hazards that we consider in the probabilistic safety analysis as complementing to the deterministic safety analysis. We look at various phenomena, thunderstorm, gusts of wind, a range of tornadoes, the potential missiles that might be generated from tornadoes. There has been modelling that we have adopted from the Electric Power Research Institute to help us understand the potential impacts. And when we factor that into the PSA, we compare our results to our safety goals, we find that there is substantial margin to those safety goals. It takes into account the deployment of EME, that they are tied down. That was one of the lessons learned actually, to make sure that they can withstand the forces of high winds, and so they are tied down so that they are not incapacitated during these sorts of events. And the risk is low for high wind hazards.

THE PRESIDENT: I always ask this question, I think by now you're sick of that. So forget about all the probabilities. Assume all your trailers, all your backups are all destroyed. Don't ask me how, they are all destroyed. Can you get assets and facilities from Darlington, Bruce and the U.S.? I thought, if memory serves, you have an MOU, an understanding that they will be able to, in a very short time, bring you backup material. Correct?

--- Pause

MR. GREGORIS: Steve Gregoris, for the record.

Dr. Binder, you are absolutely correct, the equipment we have at Pickering, we have similar equipment at Darlington, some of that equipment is shared between those sites and can be moved between the sites, and we have and ensure that capability on an ongoing basis. We also have inter-utility agreements so that we can share equipment between different sites outside of OPG.

I am going to ask Steve Lesiuta to speak to that.

MR. LESIUTA: Thank you.

Steve Lesiuta, Director of Emergency Management, for the record.

So we do have inter-utility agreements

with other utilities in order to share equipment in this type of event. We are in regular dialogue with INPO if there are any -- for other equipment-sharing as well. And also an additional -- the Independent Electricity System Operator makes getting power back to a nuclear power plant the number one priority for grid restoration.

MR. FRAPPIER: Gerry Frappier, for the record.

I just want to make sure we all know what we are talking about here, because the question was associated with the Fukushima accident. So let's be clear that for the Fukushima accident the generators and that failed because they got flooded. We don't need our emergency mitigation equipment, we don't need to bring them in from other sites. There is backup equipment that is already, as was mentioned, fully installed -- it's not mobile, it's fully installed -- seismically qualified, been analyzed against hurricanes, tornadoes, all the rest, and will be there if needed.

So what we are talking about now is -- because of the doomsday scenario that the president likes to always point to -- that all the analysis suggests that that is more than adequate. Because of Fukushima we said, look, maybe there is something we can't even think about right now. So they now have the emergency mitigation

equipment that can be onsite, delivered and, as was just mentioned, can be put in service very quickly. And just because maybe something else will happen, we can go offsite to get some of that equipment as well very quickly. Also, I would point out that in the CANDU design we have a lot more time than was available in Fukushima.

But if you want it just comparable to Fukushima, where their generators were they were susceptible to floods, as we have all noted. That is not the case at Pickering. They are not susceptible to floods, not -- whatever the word is -- they will not fail because of high winds, hurricanes or seismic activity.

THE PRESIDENT: Thank you.

Questions? Ms Penney...?

MEMBER PENNEY: Thanks. I'm looking at H6.B, so this is a question for CNSC staff, and I'm looking at -- it's page 162 of 314, so it's licence condition G.6 associated with public information and disclosure. And it's probably a really simplistic question. Just so that I understand --

THE PRESIDENT: Sorry, sorry. You are in a different numbering scheme.

MEMBER PENNEY: Yes, okay. So page 24 of 176.

THE PRESIDENT: Okay. That's better.

MEMBER PENNEY: So it's the Licence Conditions Handbook.

THE PRESIDENT: Twenty-four.

MEMBER PENNEY: The one that was in the supplementary filing.

THE PRESIDENT: Right. Got it.

MEMBER PENNEY: You have it?

MR. FRAPPIER: Yes.

MEMBER PENNEY: Okay. Thank you.

So the question is really -- we have heard a number of requests for additional information that would be available to the public and some of it falls in the realm of environmental data, groundwater data, raw data, that sort of thing.

So the number one question is: Would it be covered by this condition or a further on condition which would be associated with environmental compliance?

When I look at this condition, the first box tells me the OPG document, Nuclear Public Information Disclosure, I'm assuming, and so I have a question there about how often they submit it to CNSC for approval.

Then there are two Licensing Basis Publications. One is about Public Information and Disclosure and then the second one is Aboriginal Engagement. And I guess my question about those two is

how -- you know, are they updated? Then does OPG have to submit an implementation plan?

And I guess at the end of the day my question really is: With respect to the requests for additional information being made public, would this be where it would be reflected in an annual report from them, an annual submission from them?

MR. FRAPPIER: Gerry Frappier, for the record.

So lots of questions in there, but I would maybe start and then I can ask some people behind to give some extra details.

So there's the public information disclosure condition that is here and I will talk about in a second, and then, as you mentioned, there is an environmental requirements to meet environmental. Both of them have requirements with respect to reporting and making data available.

Mr. Rinker mentioned about if you look at a lot of the intervenors and their concern with respect to data, I would classify it as it's (a) you can always ask for a set of data, and (b) if you don't have the time to put it together, nobody is going to be happy. So we are really trying to step back and sort of say what is the appropriate level of data that should be out into the

public and have a whole program for that, which would not be this one.

MEMBER PENNEY: Yes. And so I have other questions about environmental after that.

MR. FRAPPIER: Yes. So if we take that one aside, then this one here is a requirement for the licensees to have a public information program. You will note that they have a document that is under their control. However, if they make any changes to it they have to notify us. So we will be --

MEMBER PENNEY: Well, it actually says "Prior Notification" "No".

MR. FRAPPIER: Yes. So before they make those changes they have to let us know that they are going to be making any changes to this.

MEMBER PENNEY: But it says no prior notification required. So I read that to mean they don't have to tell you.

DR. VIKTOROV: If I may bring a small clarification here?

MR. FRAPPIER: Yes.

DR. VIKTOROV: Prior notification means prior to being implemented. They still have to notify us of any change, but they don't have to wait for our approval. We will review it anyway.

MR. FRAPPIER: So we will be reviewing it. Then the other document is a REGDOC that comes from the Commission and so it's into that whole grouping of REGDOCs that once they have been updated and there is an implementation plan that would go into how they would get into the Licence Conditions Handbook.

With respect to the actual content of that document, I would ask Meghan Gerrish to give us some insight into that.

MS GERRISH: Meghan Gerrish, for the record.

OPG does submit public information programs and disclosure of protocols and there's criteria for the disclosure piece of that, and event notification and such. There is annual review of compliance of their program. So on an annual basis CNSC staff will review their program and measure it against what is outlined in their public information and disclosure protocol.

MEMBER PENNEY: Thank you for that. So when they provide you their annual update, is that right, does it also include indigenous engagement?

MS GERRISH: That indigenous engagement piece falls under a different regulatory requirement.

MEMBER PENNEY: So where would I find the Licence Conditions Handbook requirement for that?

MR. JAMMAL: It's Ramzi Jammal, for the record.

MS CATTRYSSE: This is Clare Cattrysse, the Director --

THE PRESIDENT: Go ahead.

MS CATTRYSSE: Can I go ahead? Sorry. This is Clare Cattrysse, the Director of the Policy Aboriginal International Relations Division. Maybe I do want to clarify.

The public information disclosure document includes all key stakeholders, which does include indigenous peoples. So it would be what they are doing with all their key stakeholders. However, there is REGDOC-3.2.2 which was actually approved by the Commission in February 2016. I want to clarify this is a slightly different regulatory document, it applies when there is an application that comes in. So it applies when there is an application to the Commission such as this one that could potentially raise duty to consult and it's to make sure that licensees get out there and talk to communities before their applications come in the door and to meet regularly with CNSC, which they have done in this case for this application, to ensure that they have been meeting the requirements of the REGDOC, basically helping the CNSC with our duty to consult obligations. Now, in this project the

formal duty wasn't met. OPG chose to voluntarily meet the requirements of the REGDOC, which was to submit material in their CMD, to keep us updated and to have regular meetings and we also did extensive engagement as well for this project. I hope that helps. Thanks.

MEMBER PENNEY: So just to clarify, so there isn't another Licence Conditions Handbook requirement that covers off indigenous engagement other than this one; is that right?

MR. FRAPPIER: Gerry Frappier, for the record. That's correct.

MEMBER PENNEY: And is there an annual report on indigenous engagement that is also provided to the CNSC?

MR. FRAPPIER: I would ask Clare Cattrysse to provide some detail and maybe talk a little bit slower, Clare.

--- Laughter / Rires

MS CATTRYSSE: Clare Cattrysse from the Director of the Policy Aboriginal International Relations Division.

Yes, now that we are doing annual reporting on the Regulatory Oversight Reports we definitely will be reporting and have been as to what engagement activities have been taking place over the course of that

year with respect to the facilities before the Commission.
Thank you.

MEMBER PENNEY: Thank you.

MS CATTRYSSSE: And perhaps I can just add one other thing. We also do offer the public -- we have a Participant Funding Program that is offered for all applications and licences coming before the Commission, but we also do offer participant funding to members of the public and indigenous groups so that they can come and intervene through written interventions for the annual oversight reports, whereby if they feel that they have not been engaged appropriately or they feel they have issues they have brought this forth before the Commission or want to say positive things about the engagement activities, they are very welcome to do so as well. Thank you.

MEMBER PENNEY: Thank you.

Just one last thing. So there is an annual report to you in the public information group and you review it and approve it?

MS CATTRYSSSE: Yes. There are a number of activities that take place to go through and verify compliance on this. It includes numerous updates, telephone calls, check-ins, product, you know, showcasing and that kind of -- those sorts of things.

THE PRESIDENT: So we had a lot of

discussion about information availability and I thought I heard you say that you are going to review the difference between information and data, particularly on the environmental data, et cetera, and you will re-examine what is that you are keeping, what is it you are releasing. So I just want to confirm that that's where I heard you landing on.

MR. FRAPPIER: Gerry Frappier, for the record.

That's correct, we do have a program that is looking at it, but it won't be under the public information and disclosure, it will be more in the environmental reporting and that, so just in a different section.

THE PRESIDENT: Well, I don't know, sometimes I thought CNSC staff should tell OPG you should release a particular thing on your website. That's part of the public information. So I don't see why some data, you know -- release environmental data should not be part of that program.

MR. FRAPPIER: Gerry Frappier, for the record.

So certainly our Communications Group and the OPG Communications Group are in extensive contact, and if there are things that we think should be released and

there is a discussion process, perhaps Meghan can give us a bit of information on how that occurs.

MR. JAMMAL: It's Ramzi Jammal, for the record.

You are correct, everybody is now focusing on the detail. There is a program that is called Public Information Program. Within it there are several RDs that they must comply with in order to provide from proactive disclosure to public information. I will let my colleague Meghan tell you like any specifics. For example, pamphlets, they communicate with our communications, proactive disclosure with respect to events. So each RD has a guidance and requirement they must comply with. But you are correct, at the high level under the Public Information program they have to be -- some of them will be amended. Like Meghan committed, I think the day before yesterday, to review information at the 50-kilometre zone. Then that RD will be amended accordingly.

THE PRESIDENT: Okay. Thank you.

Questions? Ms Velshi...?

MEMBER VELSHI: Thank you.

A question first to OPG and then staff, it's around safety culture assessment results. Can you share with us your results for the last few years and what the trend has been and what have been some key areas of

improvement that have been identified, please?

MR. MANLEY: Robin Manley, for the record. So I'm just going to give us sort of general context and Steve Gregoris is going to provide a little bit more detail.

So just to sort of reiterate a couple of things. We have a safety culture assessment program which we established a number of years ago, which is benchmarked internationally and benchmarked in Canada as well with our peers and informed by advice from organizations like the Institute of Nuclear Power Operations, who we have worked with closely over the years to develop, you know, industry best practices in that regard. That process brings in expert bodies to assist us sort of as a comprehensive program that includes interviews with individuals, interviews with panels, like groups of people, as well as questionnaires or surveys. That information is compiled using a methodology, which again we have established over the years, and which we have explained to CNSC staff. And we are aware that CNSC staff itself is in the process of working on that and has developed a regulatory document, and we along with industry peers have provided feedback on that process.

So with that context in mind, Steve, are you ready? Thank you.

MEMBER VELSHI: Was that just a filler of time? Thank you.

MR. MANLEY: I just wanted to set the time. Thank you.

MR. GREGORIS: Steve Gregoris, for the record.

So, as you know, and I spoke to it briefly earlier in the hearings, other than talking about the traits every day we do formal assessments. Part of those assessments are on a three-year basis done by OPG nuclear, so we are into an assessment right now. I can speak to the one done three years ago specific to Pickering and I will read some of the words I have here because I don't have that memorized.

With regards to the assessment that was done in February 2015, the assessment concluded that overall Pickering has a healthy nuclear safety culture, there is a healthy respect for nuclear safety and nuclear safety is not compromised by production priorities. That was the overall finding.

As far as strengths, a respectful work environment. They are typically linked to the 10 traits of a healthy nuclear safety culture. So respectful work environment was identified as a positive trait and the fact that individuals didn't feel that they could not bring up

any issues that were of concern. As well, decision-making was another one that was seen as a strength, and in two parts. One was around the level of decision-making and the rigour in decision-making and how as the decisions become a bit more I will say nuclear safety significant, the appropriate processes are used to make those decisions.

With regards to improvement opportunities, there was a couple.

Communication. There was an improvement opportunity that we could communicate better and more often, especially around some decisions and there are some very specific actions that were taken to communicate decisions to the station so they have a better understanding of those decisions, especially when they get to a higher level and formal processes.

And problem identification resolution. And I say that because really it's around not being satisfied with having problems and resolving them. So while there is a very strong process to identify and to resolve problems, there is also a feeling like we still need to continue to stay sensitive to it and continue to address those problems going forward.

MEMBER VELSHI: Thank you. And you are expecting your 2018 results soon then? Are they imminent?

MR. GREGORIS: Steve Gregoris, for the

record. I would expect those results quarter 4 of this year.

MEMBER VELSHI: Given many of your other performance indicators have shown marked improvement over the last few years, I wondered if there was a quantitative number from the safety culture assessment and if there was any correlation with things like a conventional health and safety performance or forced loss rate or measures like that.

MR. MANLEY: Robin Manley, for the record. I will start and perhaps they may have some additional comment.

There is no quantitative measure for this. In fact, this is one of the things that is probably hardest to measure in a quantitative way. So while we work very closely with the best in the business as to how best to do this, and that includes going to these IAEA conferences in Vienna and hearing all the experts and their advice on how to do it, the efforts to, you know, make human perception as a collective and how the whole organization as a sort of organic group feels and acts, it is really not subject to quantitative measurement, so we do the very best we can.

MEMBER VELSHI: Thank you.

Staff, anything else to add?

MR. FRAPPIER: Gerry Frappier, for the

record.

So certainly safety culture, as we mentioned, has been something that we are keenly concerned about, are aware of, and a lot of improvements that we are going to do as a regulatory framework.

With respect to the Pickering safety culture, I would ask Mr. André Bouchard back in Ottawa to give some comments.

MR. BOUCHARD: André Bouchard, Director of Human and Organizational Performance Division.

So I could corroborate what the OPG's authorities have been discussing, as well as Mr. Frappier. Staff is well aware of the self-assessment that was done in 2015. We are also aware of what is being currently done. We are aware of the method used by OPG, as well as we were able to read the report and develop our own understanding in discussions with OPG as well as following the implementation plan from OPG as well. These activities we intend to do again for the 2018 assessment as they would form part of a proper CNSC safety culture oversight for its licensees.

MEMBER VELSHI: Thank you.

MR. LOCKWOOD: Randy Lockwood, for the record. I would like to address your question, Commissioner Velshi.

I want to emphasize that policy one right from our board of directors is nuclear safety is top priority. It takes priority over everything, schedule and production, and it encourages staff to speak out for even the minutest of problems. Although we can't speak to a specific number like you asked, it is pulsed annually by the Nuclear Safety Review Board. In addition, we just recently completed a WANO evaluation that commented on our safety culture and the strength to it and I will point out that we received a strength in teamwork. Also, OSART recently, in 2016, the fall of 2016, commented on our safety culture and I will quote the leader of the OSART team:

"We observed that the plant senior leadership team is constantly reinforcing the value of safety as top priority." (As read)

And last, you heard this week from intervenors, staff representatives from society and the PWU, as well as vendors that commented on the positive and healthy safety culture that exists at Pickering.

And lastly, a point to our survey that has come up, which both Robin and Steve touched on already, that will be completed in the fall of this year. We complete that every three years. But to give you a sense

for participation in OPG, we just recently completed that at Darlington and the participation was 92 percent.

THE PRESIDENT: Thank you. I think --

MR. FRAPPIER: Mr. Chair, excuse me. Just one -- Gerry Frappier, for the record. I just want to make a correction to something that I said a little bit earlier, if I can.

Ms Velshi had asked about the IIP and changes to the IIP having to come through to the Commission. That is correct. When I said all the dates would also have to come, that is not correct. So there are dates, there's quite a bit of detail in there that provides for planning purposes and that, and there is a process embedded within the IIP that allows dates to be changed based on, you know, the reality of the projects and that. However, they are not allowed to change the intent of the IIP or make anything that's safety significant. If there is any change to the intent of the IIP, then those would have to come before the Commission.

THE PRESIDENT: Okay. We are going to break now for 45 minutes and resume. That will bring us to 1:15. Thank you.

--- Upon recessing at 12:29 p.m. /

Suspension à 12 h 29

--- Upon resuming at 1:20 p.m. /

Reprise à 13 h 20

THE PRESIDENT: Okay, we are back. I think this is the home stretch, as they say. So where were we? We're still into the question period, and who wants to start?

MEMBER LACROIX: I would.

THE PRESIDENT: Dr. Lacroix, go ahead, please.

MEMBER LACROIX: Thank you.

Still with document CMD 18-H6.B from CNSC. You may as well keep this document not very far from you.

It's in the licence condition handbook on page 63 and 64, under the title "Safety Analysis." And at the bottom of page 64 [sic], you mentioned that

"the deterministic ... analysis must demonstrate that radiological consequences of the postulated initiating events ... do not exceed accident-dependent reference public dose limits"

which are specified in a document AECB 1059, entitled *Reactor Licensing and Safety Requirements*.

Now, this document. There are three

questions. First, this document was written or was prepared or elaborated in 1972. Does this mean that the dose limits have never changed since that time? Is it something like the linear non-threshold model?

MR. FRAPPIER: Gerry Frappier, for the record.

I'll get Alex Viktorov to answer that. And but just to say that so those are associated with the original design requirements on the station and did have to do with respect to how to determine whether safe is safe enough with respect to dose determination. And so Alex can perhaps give us some more details on that.

DR. VIKTOROV: So it's Alex Viktorov, for the record.

The requirements themselves have been revised and updated since then. We have a modern regulatory document for determining safety analysis, REGDOC 2.4.1. That's the rules for the analysis. So the requirements for conducting analysis have been updated and we have a modern framework. However, the limits for dose are maintained from the original licensing basis, because they're still safe.

MEMBER LACROIX: Okay, okay.

Second question. In the table on the top of page 64, you provide the numbers for individual dose

limit and population dose limit. And on the left side, it's mentioned single failure and dual failure. What do you mean by single and dual failure? One reactor, two reactors?

DR. VIKTOROV: It's Alex Viktorov.

Again, that's a concept that was used in the original licence. And single failure refers to a fail of a process system, like a pipe break.

MEMBER LACROIX: Okay.

DR. VIKTOROV: And dual failure means a failure of a process system like a pipe break plus failure of a protective system.

MEMBER LACROIX: Okay.

DR. VIKTOROV: It's one reactor.

MEMBER LACROIX: That's good. That's good. And --

THE PRESIDENT: So just to finish with the previous one, you know my aversion to seeing reference to seeing old documents. So even though the AECB 1059 limits may not have changed, I cannot believe they're not in somewhere in the new REGDOC framework somewhere. And if it's not, it should. Put it in our modernized framework.

DR. VIKTOROV: Dose limits for accident analysis indeed put in REGDOC 2.5.2, but they are slightly different and they use a somewhat different categorization.

Again, the approach we still use for Pickering is equivalent for the modern one.

THE PRESIDENT: I know, but the reference -- you're not embarrassed by referencing to a document concerning public dose for AECB?

DR. VIKTOROV: Well, the other way to look at it is to be proud of how solid our regulatory framework is.

--- Laughter / Rires

THE PRESIDENT: I think you should modernize -- good answer, but I think you should --

--- Laughter / Rires

THE PRESIDENT: You should come up with a little bit more modernized -- we spend a lot of time trying to update our regulatory framework. We should find a place to put this. And if it's the same thing, just give it a regulatory title of CNSC.

DR. VIKTOROV: Thank you.

MEMBER LACROIX: It's what we call aging. And the third question concerns the population dose limit. What does it mean? Is it the dose per person times the population?

DR. VIKTOROV: Alex Viktorov, for the record.

In brief, yes, that's exactly what it

means. However, that's the approach that was used earlier. We no longer really rely on this kind of calculations.

MEMBER LACROIX: Okay, thank you. Thank you.

THE PRESIDENT: Do you have any more questions on LCH?

MEMBER LACROIX: Yes, I do.

THE PRESIDENT: Well, go ahead. We're not going to try to flip back and forth.

MEMBER LACROIX: Okay. Oh yes. Well, on page 93, still in the same document. It's on pressure tube-calandria tube contact. And in this page, you talk about the Heq concentration and you talk about "blister formation threshold." What is the blister formation threshold? A little bo-bo or what -- how do you define it, this threshold?

MR. FRAPPIER: Gerry Frappier, for the record.

I'd ask Mr. Glen McDougall to give us the definition.

MR. McDOUGALL: In the 1980s, when the possibility of hot pressure tubes coming into contact with cool calandria tubes was first recognized, the result of such contact is the formation of a hydride blister. And that is significant because the hydride blisters share none

of the positive mechanical properties of the tube material itself. So it's almost the equivalent of having a portion of the pressure tube wall which is absent.

This is very significant for obvious reasons. But most importantly it's under design basis accidents. The pressure tube is designed to be able to maintain not only normal system pressure, but also upset transients, for example, overpressure, things like that. So the presence of these blisters is a bad idea.

So we go out of the way, as a regulator, to ensure that the licensees take all possible actions to minimize that. The three things that we do to minimize that possibility are, first of all, that the CSA standard requires as part of periodic inspection of fuel channels that the licensees are aware of when contact has already occurred between the pressure tube and the calandria tube or that they be able to predict when it could be occurring. And they can apply appropriate maintenance procedures. There's specialized tooling that was developed some 25 years ago that is used for precisely that purpose.

If there is a situation where the licensee is unable to prevent contact from occurring, or they predict it's going to occur but before they had planned to do maintenance, then they are required to determine whether a blister could in fact occur at that contact point. I

must stress that this is only a prediction of the presence of a blister.

Blisters take some time to grow to a state where there is risk significance. That's an important thing to remember. But the point at which a blister actually initiates, it's a complicated function of a number of different things. But at its root, that point is called blister formation threshold. And through an extensive R&D program that was done by industry in the '80s and the early '90s, they were actually able to quantify that point.

So for any specific situation in a reactor -- this is very reactor-specific -- the licensees collect a certain amount of data. They plug it into an equation, and it will tell them how close they are to that threshold.

MEMBER LACROIX: Okay, thank you. So you start worrying when you know that there will be a contact, and then you take action.

MR. McDOUGALL: The CSA standard doesn't allow licensees to actually get to the point of blister formation. It starts by saying no, you must take all possible provisions to make sure that you don't have contact. That's an acceptance criteria in the standard.

But then the standard allows a process called disposition, where the licensee, if they cannot

preclude contact, then they have to go the next step, and they have to do an engineering assessment to show what the consequences of continued operation would be. That's where the consideration of the blister formation threshold comes in.

But I must stress, just to finish, that the licensee is then not off the hook. There is actually an AECB position statement dating back to the '90s, and it is still completely valid, which precludes licensees from knowingly operating with a hydride blister -- either operating with a blister or a predicted blister. And the industry understands that, and we have never got to that point with any of our licensees.

MEMBER LACROIX: Okay, that's good.

THE PRESIDENT: Anybody else has a licence condition handbook issue? Go ahead while he's looking for the next one. Go ahead, yes, please.

MEMBER PENNEY: Okay, so I'm looking at the licence control handbook question 4, CNSC staff --

THE PRESIDENT: Condition. Licence condition.

MEMBER PENNEY: Licence -- what did I say?

THE PRESIDENT: Control.

MEMBER PENNEY: I did. I think that's a Greenpeace thing.

--- Laughter / Rires

MEMBER PENNEY: Licence condition handbook. I'm looking at the environmental protection section, which is page 105 in CMD 18-H6.B. And I have four questions.

And again, just so that I understand it, it lays out the condition, and then there's documents that come from OPG, and then there are documents that are guidelines, CSA documents, and REGDOCs that guide the compliance requirements. And then there's a whole section about the action levels and the derived release limits, and how often they have to be updated and what they are currently, and then the environmental management system requirement, assessment and monitoring -- sorry I'm getting down here -- the ERA, how often it needs to be done, the guidance that is behind it.

And in there, there's management of adverse effects on fish populations. So this is my first question. It says here:

"OPG is to submit an annual report on fish impingement and entrainment monitoring at Pickering NGS by May 31 each year."

And so I think we heard that an intervenor requested that, and it was provided. So it can be made

public is what I understand.

But then we also heard that OPG does monitoring on entrainment once every 15 years.

So what's the -- are there two different kinds of monitoring? Can someone clarify?

MR. RINKER: Mike Rinker, for the record.

So the entrainment monitoring is a much more complicated research-y type of monitoring that is done more periodically, whereas the impingement monitoring is something where samples are -- you know, fish are collected on a routine basis. And so there are -- so the report is done annually, and it talks about the effectiveness of the barrier net, which is not an impediment to entrainment. It's an impediment to impingement, okay. And so that comes annually.

MEMBER PENNEY: Barrier nets don't prevent entrainment. Right. Okay, so what's the difference between the two levels of monitoring? What data do you get on an annual basis versus this other study which is "research-y," quoting you.

MR. McALLISTER: Andrew McAllister, director of the Environmental Risk Assessment division.

And we may be getting caught up in the title of it. But as we've heard earlier is that there was an entrainment study done in 2006. And then there's the

expectation under *Fisheries Act* authorization of that occurring again around 2021.

Really, this report was -- reports on the performance of the barrier net, so it'll lay out the biomass, the different fish species that have been impinged. It'll talk about barrier net performance. It also, though, has in the past provided updates on some of the offsetting measures that were put into place under the *Nuclear and Safety Control Act*. For example, we've heard talk of the Atlantic salmon restoration efforts.

So those get -- and those were put into motion to help deal with the entrainment parts. So that narrative gets captured into that. So I believe it's more of a title than anything but it's -- the focus is on impingement.

MEMBER PENNEY: So now I'm even more confused. So are we talking about the annual report now or are we talking about the annual report to you, the annual report to DFO --

MR. MCALLISTER: So --

MEMBER PENNEY: -- or the once every 15 year research --

MR. McALLISTER: So there's this requirement has been in place for a while. It's an annual report to CNSC staff on the barrier net performance

impingement, some of those elements I mentioned.

DFO, and they may -- I'm not too sure if they're still on the line, as a requirement in their authorization have an annual report which would capture some of the same elements, but likely go above and beyond and capture the other elements that OPG would have to report on with respect to that authorization.

But all that to say is that both -- the outcomes of both will make sure that they get reflected in the annual regulatory oversight report.

MEMBER PENNEY: Only if you have something different to add?

MR. McCALLA: Yeah, Raphael McCalla, for the record. I'd just like to clarify a point.

It's not that we're required to conduct an entrainment study every 15 years. So, I just want to put that on the record.

I'll also say that through the Bring Back the Salmon campaign we demonstrated to Fisheries and Oceans Canada that our contribution is equivalent to the impacts that we're having.

The reason for conducting the entrainment study is just to go back and verify those assumptions.

MEMBER PENNEY: Thanks for that.

So, I have three more small questions.

THE PRESIDENT: Just a second. Back to Dr. Lacroix. You found it? Go ahead. We're going to go back and forth.

MEMBER LACROIX: One last question concerning the CMD document provided by CNSC.

It's on item 15.6 on page 144. It's on import and export of nuclear substances. So, I need a snappy answer.

You provide a list of nuclear substances and the quantity of your limits for import/export in megabecquerel. Is it per package? Page 144, Table 1.

MR. FRAPPIER: Gerry Frappier, for the record. So, I'll get somebody in Ottawa to help. I think Dave Moroz is still there or -- who's best placed to answer this question.

THE PRESIDENT: Anybody...?

MR. MOROZ: Dave Moroz here. Sorry, David Moroz here, I'm the Director of International Safeguards.

This is really a question that relates to import and export and I can track down somebody here that can get you that answer.

MR. BOUCHARD: Andre Bouchard, for the record. As of Tuesday I will become the DNSR, Nuclear Substances Licences Director.

The quantities that you're seeing there

are per what we call sources, or if they are open sources then they're loose material and they're maximum quantities, they're also per devices.

So, the first example, the Cerium-144 [sic], 1 gigabecquerel, it would be a total maximum capacity of that in a loose form, or it could be 10 of those sealed sources if they are sealed.

MEMBER LACROIX: Okay. Okay. That's all right. Thank you.

MR. JAMMAL: If you need a bit more -- they are more than sources though. It's key point here is it allows the -- for the record, Ramzi Jammal to compliment Mr. Bouchard.

Some intervenors were mentioning when it was the waste licence with respect to the laundry and so on and so forth, so they are allowed to have a blank importation/exportation of the substance they sent to the U.S. either for consideration or treatment.

In addition to it, as Mr. Bouchard said, they require nuclear substance sources for calibration purposes. And what you're seeing here is we are consolidating licences into almost one site licence. So, that's why you see those.

MEMBER LACROIX: Thank you.

THE PRESIDENT: Okay. Ms Penney?

MEMBER PENNEY: Thanks. So now I'm looking at groundwater. It's on page -- again, it's in section 9.1 Environmental Protection, page 109. There's a subset there that says groundwater, OPG shall implement and it gives the CSA standard for groundwater protection. And it says implemented by December 31st, 2020.

So, there's an implementation plan for a new requirement. Is this where you would add in wording that addresses the groundwater data and making it public? That's my question to CNSC staff.

MR. RINKER: Mike Rinker, for the record. So, I don't think we're going to put it in a notice for every instance that a report should be publicly available.

Where we're hoping to move as an organization is similar to where impact assessment, *Fisheries Act, Navigable Waters*, the new National Energy Board are moving, which is establishment of a registry where there is documents that are related to environment and environmental data.

So, we've moved in that direction already. For example, if you look at the OPG or the Bruce Nuclear site you'll see our link to the environmental risk assessment and comments on those documents, CNSC comments and licensee responses are provided there.

And we're going to be moving towards

having a more established registry as opposed to individual conditions.

MEMBER PENNEY: Thank you. And another. We heard an intervenor this morning imply, or inquire about the connectivity between groundwater on site and stormwater, and I think we got a decisive response that that's not actually, you have evidence.

And so, my question is, what evidence do you have that they're not connected?

MR. McCALLA: If you can just give me a few minutes until I pull up the...

MEMBER PENNEY: I can ask another question while we're waiting, but I don't want to be distracting.

We had a little bit of a discussion around stormwater over lunch and it was clear we weren't all understanding the discussion around stormwater run-off and the requirements.

Who actually is ensuring that it's not contaminated when it goes back into the lake, when it runs off from the lake?

So, my question to CNSC staff is, is there a point of discharge monitoring requirement in the approval, in the licence, and is there a reporting requirement?

MR. RINKER: Mike Rinker, for the record.

So, there are stormwater studies because stormwater, of course, is during periods of rain, that's when you get stormwater releases, there's no stormwater releases when it's not raining.

And there are specific points of -- there are several points of discharge. Some of the points of discharge are monitored, some are more modelled during conduct of a stormwater study.

So, there's differences between a program of effluent monitoring where the monitoring is continuous and the study for which there's releases that are done on occasion.

And so, we take that information, the modelled releases, some releases are monitored, it's brought together in a review under an environmental risk assessment to understand what the consequences are.

THE PRESIDENT: So, the implication -- so, I got confused here because there was, I was told, a legal requirement to monitor whatever you would use before it goes into the lake.

And, secondly, there was an implication that some of the groundwater got mixed with the stormwater and, therefore, it is contaminated and, therefore, you should monitor it.

So, question is, is it true; and, if it's

true, what are you going to do about it?

MR. FRAPPIER: Gerry Frappier, for the record first, and then -- are you guys ready there -- because that's the question that was asked earlier about the groundwater vis-à-vis stormwater.

But I think it's also very important to differentiate, as Mr. Rinker just said, between stormwater and effluent.

So, anything that's produced within the station that is going to be released into the lake is monitored, it's effluent, there's an effluent monitoring system for that.

What we're talking about now is stormwater that might come in from parking lots, from the road, from all over the place during a major storm activity.

And then, with respect to the groundwater, if OPG is ready they could respond to that question.

MR. McCALLA: Raphael McCalla, for the record. So, the reason why we are convinced that groundwater is not getting into the stormwater system, it's simply because of the elevation of where the actual catchment structure is located.

The activities that we observe in stormwater is simply from run-off from the site and it represents the atmospheric deposition which is dependent

upon many factors, including wind direction, and it's accounted for through the dose calculation anyway. And, as we've mentioned earlier, the dose from the station is extremely low, for 2017 it was 1.8 microsieverts, and that represents a very small fraction of the regulatory dose limit.

So, that's where we believe what we're seeing and it's not attributed to groundwater getting into stormwater.

THE PRESIDENT: So, I want to understand. So, would that satisfy the legal obligation as being monitored by, I think it's Environment Canada, legal obligation to make sure that you do not release anything that could be contaminated?

There's a legal obligation here. Are you satisfied that you are now complying with it?

MR. McCALLA: Raphael McCalla, for the record. So, first of all, let's take it back to our effluent monitoring program.

So, every single effluent stream that we have at Pickering is monitored.

So, again, we're talking about deposition, so we know exactly what we're actually putting out through our stacks and as part as our process, when we go and do our ERA, we actually go back and we verify those

assumptions.

So, as we mentioned earlier, based on the work that we've done, based on the toxicity testing that we've performed, we're comfortable, we're confident that we're not having any adverse impact on the environment or the public, and that's also referenced.

If you look at the actual tritium in the drinking water samples that are collected from the water supply plants, which I think was mentioned earlier, is between 4 and 8 becquerels per litre against a target of 7,000 becquerels per litre.

MR. RINKER: Mike Rinker, for the record. I'd just like to add that MOECC was here this morning and they stated on the record that OPG is meeting their legal requirements.

THE PRESIDENT: Okay. Thank you.

Go ahead.

MEMBER PENNEY: Two more small questions on this one.

Environmental Risk Assessment section, it says:

"In accordance with...the ERA establishes...the ERA shall be updated periodically."

I thought it was a five-year recurring

event. Why doesn't it say every five years?

MR. RINKER: Mike Rinker, for the record. So, it's every five years or if there's a major change to the facility, so it could be earlier.

MEMBER PENNEY: Right. So it could say that versus periodically, which is open to interpretation.

My last question is in which --

MR. FRAPPIER: Sorry, I just want to be clear on that because you're right, it does not say it here, but it does reference the CSA standard where it says that. So I think there is clarity that it's a minimum of every five years, and then as required if there is something noteworthy.

MEMBER PENNEY: A maximum of every five years.

MR. JAMMAL: In fairness to Commissioner Penney with respect to this, we take your point, and that's the part of the discussion. So we'll extract out of the standard what does periodicity mean at a minimum five years, or if there are changes in the operations of the facility. So we'll make that reference for clarity.

MEMBER PENNEY: Maximum five years?

MR. JAMMAL: Yes.

MEMBER PENNEY: Thanks.

And one last thing, so in which of the

documents do I find here the requirement on OPG for the NSCA EA?

MR. RINKER: Mike Rinker, for the record.

So that is not a requirement on OPG. That is something that CNSC staff do, taking into account the requirements on OPG to submit quarterly an annual environmental compliance report, our inspections, their ERA, and other information that we have from other regulatory agencies.

MEMBER PENNEY: Okay. SO the NSCA EA is not outlined here. You use their data but it's nowhere in any of these guidance documents?

MR. RINKER: Mike Rinker, for the record.

So it is outline in Regulatory Document 2.9.1, which describes what it is and what the basis for that and how it is conducted.

THE PRESIDENT: Okay. On the LCH -- are we done with LCH? Well, go ahead.

MEMBER PENNEY: So page 59 of the LCH reporting requirements, again, in CMD H6.B. I just have to find it as well.

--- Pause

MEMBER PENNEY: Everybody is there before me.

So reporting requirements, a number of

reporting requirements actually in this licence condition handbook requirement, including environmental requirements, so there is quarterly reports and annual reports; environmental protection, research and development, and then scheduled specific periodic reports and event reports and notifications.

Assuming that under this, and I think it says just a little further down if there is an incident or an exceedance of a discharge or emission whatever that it falls under -- this is where the requirement to report to you falls out.

My question is about the groundwater data that we are looking at putting in the registry. Is this where that data would be reported to you? Is that -- is it this condition that requires that data?

MR. FRAPPIER: Gerry Frappier, for the record.

Maybe I'll say something generally and then ask Mr. Rinker with respect to groundwater.

But REGDOC-3.1.1 is what this is sort of specifying that they have to meet. In there, the attempt we did was to try to centralize into one area, into one REGDOC, here are the reporting requirements. So certainly the REGDOC-3.1.1, all the items, and there is others beyond what is sort of listed here, need to be reported as per

that REGDOC. And if we want additional reporting, then we can look to update that REGDOC-3.1.1, which normally would be done every five years anyway.

And then, with respect to whether it has anything on it in groundwater right now, I would ask Mike Rinker.

MR. RINKER: Mike Rinker, for the record.

So the requirements are quarterly and annual reports as a set of reports are in that document, and that would include the routine reports like environmental compliance reports, groundwater reports. It also has a requirement for reporting on events like unusual events and so on, all encompassed in that one document.

THE PRESIDENT: LCH still? Okay.

So now other questions? Dr. Demeter...?

MEMBER DEMETER: Thank you. I just wanted, just for sake of clarity for me, there was a discussion on the mitigation measures for the tritium in the groundwater and there was some discussion of what is going to happen during the stabilization period and thereafter. I was a little bit unclear.

So right now, I understand that the foundation acts as the hydraulic sink that captures most of the tritium plumes in the groundwater and then the groundwater monitors this. But from a -- just to ensure

that I am comfortable with legacy issues, what are the go-forward plans for mitigating that sink of tritium, especially during the stabilization period which is part of this licence because it is a part of the operation.

MR. RINKER: Mike Rinker, for the record.

So I think these plans would come together with the application for a decommissioning licence, how they intend to decommission the facility in a safe stage and over what period of time they would be expecting to do so. So we don't have the actual plan. There are available mitigation options.

MEMBER DEMETER: So the request for a 10-year licence includes the stabilization period. So during that '25 to '28 -- 2025 to '28 -- they would still be pumped and acted on as they are currently?

MR. RINKER: Mike Rinker, for the record.

Yes, that would be -- that would be outside the licensing basis to do anything else but that.

MEMBER DEMETER: Okay, thank you.

THE PRESIDENT: Question? Ms Velshi...?

MEMBER VELSHI: So I have a few quick ones that I'll get through.

The first one is for staff. Where you have presented both in your written and in the presentation with the slide deck on the plant performance rating, you

are not providing an integrated plant rating.

So this would have been slide 6 in CMD H6-C. Is there a reason why there is no integrated plant rating provided?

MR. FRAPPIER: Gerry Frappier, for the record. We'll certainly talk more about that at the ROR, that general report.

Right now, there is -- we are looking at the sort of benefit and whatnot of an integrated plant rating. For this presentation and that we wanted to ensure that we got out the data from 2017, and so we had the data for each one of the safety control areas, and that's what we put in.

MEMBER VELSHI: Thank you.

This is just a question that I still had in my notes. It was about tritium being labelled as the largest -- I'm sorry -- Pickering being labelled as the largest tritium emitter, non-military facility and OPG disagreed. So which is the largest tritium emitter?

MR. MANLEY: Okay. Robin Manley, for the record.

So we have a reference. We have a COG document which provides that. We can look that up. My recollection is that it's another facility in Canada. We can look that up. My question really is should we be

publicly disclosing that information in front of everybody here?

MEMBER VELSHI: Fair enough. If it's a COG publication, I can get my hands on that. That's fine.

And my next question, and I know this doesn't have anything to do with the Pickering licensing hearing but, Mr. Jammal, I wanted to just check with you, given that you are going to take this lead on KI pills distribution in the ingestion control zone for Pickering, what's happening for Lepreau? And again, maybe if you don't have a quick answer, you don't need to answer it here.

MR. JAMMAL: It's Ramzi Jammal, for the record.

I'll give you a high level answer from a Point Lepreau perspective. The pre-distribution of a KI pill has already been done before any of OPGs or Ontario licensees put it into place.

With respect to the extension, I believe I'll verify for the record that pre-distribution to take place. The amount of the public in the vicinity is a lot smaller than it is in Ontario. I will get you -- I will ask my colleagues from the EMPD if they have anything to add with respect to the KI pill.

MEMBER VELSHI: I can follow up on that

later, as I said. It's not related to this.

My last question is for OPG. Again, it's just a question of clarification, Mr. Lockwood, where you said given what you had heard over the last few days about the need and opportunity to improve the level of awareness about emergency management in the further zones that you were going to revisit that and see what more could be done about that.

I just wanted to confirm that that really was up to the ingestion control zone that you were going to look at, and your plans would also include how you are going to measure the effectiveness of whatever initiatives and level of awareness. I say that because I think as a Commission we probably want to monitor how that initiative is coming along and how effective that is.

MR. LOCKWOOD: Randy Lockwood, for the record.

That's correct. We are going to investigate several ways and means to expand and enhance awareness in the community, considerably out farther than a 10-kilometre zone. I accept that we'll have to look at its effectiveness.

I will also admit I have not completely thought that out but we'll commit to doing that, and I'll speak further to that topic in my closing comments.

MR. JAMMAL: Mr. President, if you may, Ms Velshi, I confirmed with my colleagues. The confirmation is pre-distribution has been going on for, I would say, a long period of time at Point Lepreau. It's up to 20 kilometres to include school boards and every household.

MEMBER VELSHI: Okay, so you may want to look at the 50 kilometre zone but, again, not for today.

MR. JAMMAL: We'll take that into account with respect to the population and the extent.

THE PRESIDENT: Dr. Lacroix, you had a question?

MEMBER LACROIX: Yes, I do have three inquisitive questions to OPG.

Okay. Concerning the supplementary information provided by OPG, Document CMD 18-H6.1B, on page 15 -- it is the supplementary information provided by OPG, Document 18-H6.1B, on page 15.

A quick question, quick answer.

It concerns the deuterium ingress, the second paragraph. You mentioned that you monitored the deuterium ingress through a regular sampling of the pressure tube.

Tell me, what is this test all about?

MS CHARETTE: Kathy Charette, for the record.

We monitor deuterium ingress through what we call scrape sampling. That's whereby we take a small sample, a thin sliver of material, from the pressure tube at various locations around the tube, as well as in the body of the tube.

We send those samples to Chalk River and they measure the deuterium in them.

MEMBER LACROIX: Does this sampling affect the performance, the fracture toughness of the pressure tube itself?

MS CHARETTE: Kathy Charette, for the record.

There are no harmful effects from the sample. They're very thin.

MEMBER LACROIX: I see, very interesting. The second question is on the next page, page 16.

You mentioned that a pressure tube rupture is a DBA. Tell me, what is the sequence of events and the action that you would take in this case, step by step and in plain English, and in a nutshell? Thank you.

MR. GREGORIS: Steve Gregoris, for the record.

I will start by saying yes, a pressure tube Leak Before Break scenario and rupture is part of the

design basis accidents. We have specific procedures in place to deal with that kind of an event and we regularly train our control room operators and field operators to respond to that.

There are a number of triggers that would initiate entering into the procedure. Typically it would be an increasing dew point, so you could get an alarm. Or you could get a rate of rise alarm. They are two separate types of measurements that are alarmed. If there's a lot of water, you could get a beetle come in. It's alarmed as well.

If your time between purges is shorter than normal, that would be an indicator to start looking as well. Or during a purge if the dew point is not dropping quick enough, that's another entry criteria.

Any of those entry criteria would get you into the procedure.

In that case it's very specific. It gets the operators to reduce power on the unit in a controlled fashion and very short timeframe, so in the time it would take to brief the team and get them into the procedure and everyone in role.

You bring the unit down in power to a very low power. You then move towards cooling down the unit and taking pressure off the heat transport system. And in

doing that, you monitor for channels where the temperature is lower than expected, because in this case with the water there you lose the insulating property of the CO₂ gas, so then you will know which pressure tube is the affected tube.

And then as you come down, you will further depressurize fully cool down -- sorry, cool down, depressurize fully and once you're fully depressurized you are basically taking all pressure off that tube.

MEMBER LACROIX: When you say you bring the power down, is it a shutdown or you just bring it down slowly?

MR. GREGORIS: Steve Gregoris, for the record.

So we do bring it down in a controlled fashion. There are defined rates that you can bring it down and we will pick one of those rates and bring it down.

MEMBER LACROIX: Thank you.

And my third and last question concerns the cooling water.

For one unit at full power what is the -- well, the page is, I guess, page 21. That's a general question.

At full power, what is the volumetric rate for one unit?

MR. GREGORIS: Steve Gregoris, for the record.

I don't have on the top of my head the volumetric flow right now. I will tell you --

MEMBER LACROIX: Okay.

MR. GREGORIS: I should.

It's no different, though, than whether you are at low power. Once you have your two condenser cooling water pumps that are running, that flow rate is similar. It's just the heat loading that changes.

MEMBER LACROIX: Okay. And what is the maximum temperature of the discharge?

MR. GREGORIS: Okay. There are limits. Typically, I think it's -- and Ralph is going to -- do you want to take it?

MR. McCALLA: Raphael McCalla, for the record.

There are two conditions in the approval, the Environmental Compliance Approval. There's 11 degrees. So the delta between the inlet and outlet can't be greater than 11 degrees.

And there's also a 32-degree temperature limit for the effluent. And that value changes throughout the year depending on what's happening.

So there are two other conditions that

would cause us to change those values.

MEMBER LACROIX: That's great. That's precise. Thank you.

MR. GREGORIS: Steve Gregoris, for the record.

I just wanted to add something because I know Commissioner Penney had asked around those temperature limits and when that occurs. Obviously there is a reporting requirement.

I wanted to assure you that we are not satisfied with having to report or be outside those limits. And to that effect we've made significant investments for the conditions where we get outside those limits, specifically for algae runs. We've invested in technology to predict those runs and also to improve the equipment to deal with those runs, and for cold weather conditions and icing conditions. So we can deal with those conditions so that we can reduce those infractions.

We also will reduce power on the units. We reduce heat load that way and we will obviously get out of being beyond those limits.

So I don't want to leave you with the impression that we're okay with exceeding those limits.

MEMBER DEMETER: Thank you very much.

My last question. This is just to

reconcile to see if I'm understanding something correctly. This is a human performance issue.

On page 37 of CNSC's initial submission, H6, it has the statement:

"OPG has hours of work in process to ensure that workers don't work over 16 hours a shift."

When I look at the REGDOC that that refers to, it says don't work more than 16 hours in a 24-hour period. They might work split shifts or something.

But the question I had -- these are for safety-sensitive positions, so I just want to make sure that's industry standard and that's okay, because that's a long time.

On the next page at the end of the chapter it says:

"For example, OPG does not have an auditable system in place to confirm compliance with limits of hours worked as required by OPG internal governance. The findings were communicated to OPG and CNSC Staff will monitor OPG'S progress with its resolution over the issues."

(As read)

So maybe an update on that part of it and whether 16 hours is reasonable.

It's part of the REGDOC. The REGDOC gives you guidance on how much sleep you need after 12 hours. It doesn't have a 16-hour component. That's another story.

But more it's monitoring of compliance for auditable.

MR. FRAPPIER: Gerry Frappier, for the record.

As you know, the fitness for duty has been quite an area of focus, ensuring fatigue is well managed and we came up with a new REGDOC. There were always rules in place and then the OPG itself has its own controlling documents.

It gets even more complicated than the 16 hours versus 12 hours.

So if I could get a short version of that from André Bouchard with respect to the 16 hours and how that fits in and whether it -- so, André, if you're there?

MR. BOUCHARD: André Bouchard, Director, HOPD.

So the 16 hours is an absolute limit that was set by the REGDOC in a given day, but obviously the licensee's measures and expectations are 12-hour shifts or below. Eight hours is even better from a requirement

standpoint.

So it's important to understand that the REGDOC sets an absolute of 16 hours per given day. But it is expected that the licensee's hours of work would be below that. So normal is 12 hours and below that.

With regards to the audit, really what the conclusions were was more about a paperwork trail of practices rather than being effectively managed or issues of management of hours of work. And that's the important key message with that.

MR. FRAPPIER: Gerry Frappier, for the record.

As André was making reference to, in our interest in fitness for duty and that, we did put together a bit of a program of going and auditing exactly not just what we're being told but where the evidence is for that.

And during that audit, that review that André's team has done, there was a shortcoming with respect to the auditability, if you like, with respect to the records of the hours of work.

I think your question was: Where are we on that now and how is it progressing?

So, André, maybe you could give us a little bit of an update as to where we are with the follow-up with that audit?

MR. BOUCHARD: André Bouchard, for the record.

We have just received the letter from OPG detailing their actions and we are in the process of reviewing actions that have been taken for this. So we are right in the middle of the follow-up for that.

MR. FRAPPIER: Gerry Frappier, for the record.

I would just add that we will be reporting on that at the annual. It is one of the areas that we have identified to keep track of across all the fleet of units, not just here at Pickering.

MR. GREGORIS: Steve Gregoris, for the record.

I just wanted to add the rules around hours of work, they are very clearly spelled out in our procedures. They line up with the Standards. And they are based on whether you work shift or days, and there are totals in a day. For shift workers there is a 16-hour limit. There are also limits between shifting from days to nights, and it depends on how many consecutive days or nights you've worked. So if you've worked three nights in a row you need three days off before you can go back to work.

So it's very clear. We use an electronic

tracking program, that's part of our minimum compliment that also would look at hours of work. But there were inconsistencies in this audit, as Mr. Frappier said, between that and say where we do time reporting and also logs.

So that was where the inconsistencies were, and we'll certainly work with CNSC Staff to clarify that going forward.

THE PRESIDENT: Questions or comments? Go ahead quickly.

MEMBER LACROIX: Well, quick comment. I take this opportunity to thank the personnel at OPG as well as CNSC Staff, for the documents that they submitted to us. You simplify my work.

By the way, Mr. Gregoris, I got my answer, I calculated, so you need not to answer. Thank you.

THE PRESIDENT: So I've got a couple of items. First of all, just to make sure that I understood what was sort of agreed on. That operating beyond 2024, if we get an application for that, it will require another public process, another public hearing. Correct?

MR. FRAPPIER: Gerry Frappier, for the record. That's correct, that it would have to come to the Commission and the Commission will decide how it wants to deal with that. I think that would be your decision as to

whether it's going to be a big hearing like this or whether it's --

THE PRESIDENT: So you're putting it on us to decide that?

MR. FRAPPIER: Well, it has to be what the Commission --

THE PRESIDENT: Okay, I just want to make sure that I understand where we are.

Similarly, before 2028 you will come with a decommissioning plan, right? Also we'll have some sort of a public proceeding? I just want to make sure that we are on the same page.

MR. LOCKWOOD: Randy Lockwood, for the record. So to answer the first question, what we have here before the Commission and if we were going to extend operations past 2024, will it be a public hearing? Yes, we support that.

The second one was --

THE PRESIDENT: Decommissioning plan before 2028.

MR. LOCKWOOD: Second one is we see this, applying for a decommissioning licence. So will that require a public hearing? I don't know.

THE PRESIDENT: Okay, I stand corrected. Any extending beyond 2028, if it's a full application for

full decommissioning, it'll require a public hearing. Okay? If it's a licence extension for keeping the status quo, it's maybe a different... Is that your understanding of what is being agreed to?

MR. MANLEY: Robin Manley, for the record. Yes.

THE PRESIDENT: Okay. So then my last topic is we heard many many interventions about the proximity of the population to the site. In fact, Greenpeace suggested we should put in the land use business.

No, before we get into that, what I'd like to hear in the joint review panel for the new build of Darlington, the joint review panel actually instructed -- I'm using loose language here -- for Staff, or somebody, to examine the land use issues and possibilities, and there was a follow-up on that.

So could you share with us what happened?

MR. FRAPPIER: Gerry Frappier, for the record. I'll ask Mr. Jammal. But just to remind the Commission that that's exactly true. At the joint panel that was held, land use came up for discussion around Darlington, and if there was going to be a new reactor at Darlington. We were directed to go work with the province as to how that might be managed or controlled or whatever.

We have taken several follow-up actions on that. Mr. Jammal can give us some details.

MR. JAMMAL: Ramzi Jammal, for the record. I'll start with the high level, and if you have precisions I'll provide them to you.

You are correct, multiple recommendations came from the JRP, specifically with respect to what they call the PPS. Our Staff did work with the stakeholders at the provincial level.

The PPS means Provincial Policy Statement. Thank you. I'm getting old, sir, I'm forgetful.

With respect to the Provincial Policy Statement, on the population and considering the population density, the NPPs, we met the objectives. So in other words, the outcome has been an update to the PPS, again I already forgot, by 2014, their policy has been updated. Then the municipalities now will have to be inline with the update that has taken place by the provincial authority.

Now, that is not retroactive. That will be for every new site that is coming on board with respect to siting, so that there'll be establishing and review of the population density around nuclear power plants.

So the success has been achieved by the CNSC Staff in cooperation with the stakeholders so that the provincial policy has been changed, has been updated, and

the municipalities will have to be inline with it since 2014.

In our annual report to the Commission of 2014 we presented this update to the Commission. All the recommendations presented by the JRP has been closed and we have a consultant report that the Staff did engage, and we can table it to the Commission as part of the record.

THE PRESIDENT: So is there any vehicle point that we can point to the local municipality, the provincial government, about the ongoing development or intensification of Pickering? Is that something that would have any effect? Because we are now only talking about until 2024.

MR. JAMMAL: Ramzi Jammal, for the record. I cannot tell the Commission what to do, the Commission will provide the direction. But in any case, they key point here is you're on the right track. The point here is that the province's policy statement of 2014 now includes the land use compatibility and the definition of major facility.

So it's all municipality now, and the Province of Ontario need to demonstrate alignment with the 2014. So if there is a sense from the Commission that a municipality is not in alignment, the Commission can direct them to do so.

THE PRESIDENT: So I don't understand.

Alignment with --

MR. JAMMAL: The new policy.

THE PRESIDENT: -- a new build?

MR. JAMMAL: Correct.

THE PRESIDENT: But it wouldn't apply
to --

MR. JAMMAL: It's not retroactive. It was made very very clear that this is not retroactive with respect to the existing facilities.

THE PRESIDENT: OPG, do you care to comment?

MR. GREGORIS: Steve Gregoris, for the record. Dr. Binder, I would just say, and Mr. Burns has said this before, our emergency preparedness procedures they're flexible, they're scalable, we look forward, as part of those procedures, and specifically for evacuation time estimates, for changes in population, and I think we're well-covered that way.

THE PRESIDENT: Okay, thank you.
Anything? So you have the final word.

MR. FRAPPIER: Gerry Frappier, for the record. Just because I know they should have the final word --

--- Laughter / Rires

MR. FRAPPIER: -- but I want to take this opportunity to have a CNSC final word before they have the final final word.

Because I just wanted to bring forward, you know, obviously this is a very big undertaking, and I'd like to thank our Staff both here and in Ottawa, and I appreciate Mr. Lacroix mentioning that.

I also would like to point out that certainly during this hearing, a little bit different than Part 1, but certainly during Part 2 there was a lot of discussion on emergency planning around Level 5 of the defence in depth, if you like.

I want to assure people that there's Levels 1, 2, 3, 4 as well, and they've been completely taken care of as well. I would suggest that from Staff's perspective, we spend much much more time on that. Because, as we mentioned, all credible accident scenarios, all credible accident scenarios are put into what we call designed-based accidents.

Any one of those accidents will result in the Province having to do nothing as far as evacuations, as far as KI pills or anything like that. That's not even including the emergency mitigation equipment.

After Fukushima there was a lot of emphasis on what's the doomsday scenario, and be ready for

that, which is a non-credible design or a beyond-design-based accident as we call them. So out of that we've done a lot of work over there, Pickering had done a lot of work to improve with EMEs with severe accident management guides. All of those have demonstrated that, again, we can handle even a severe accident.

If we go much much more beyond that, that's the discussion that mostly has been talked about over this past week. So we're way out there as far as our probability of occurrence, and I just want to make sure that everybody knows that for all the things that we can predict that are going to happen, we're well-covered without any of the need for that.

Then the other thing I just wanted to mention was I've been working with Dr. Binder since he first started, and I think this is going to be the last hearing that I'm going to get a chance to be in front of you. I just want to mention it's been an honour to provide you with the wise counsel that we can, and take it for what it's worth. I wish all the best to you in your retirement as well.

So thank you very much.

THE PRESIDENT: All of a sudden my Staff are nice to me.

--- Laughter / Rires

THE PRESIDENT: Go ahead.

MR. LOCKWOOD: Randy Lockwood, for the record. President Binder and Members of the Commission, on behalf of Ontario Power Generation, I would like to thank you for the fair and open way in which you have conducted these hearings. We respect this important part of the licence process.

I would also like to thank Louise Levert and her support staff, Melanie and Johanne, for organizing these proceedings. Of course, thanks to the City of Pickering, our hometown, and the staff here at the Pickering Recreation Complex for graciously hosting these proceedings.

For OPG, these discussions speak to the heart of our social licence. The social licence is just as important as our operating licence. But unlike an operating licence, it's not something you apply for every 10 years. It involves daily engagement and dialogue with our neighbours, Indigenous communities, and stakeholders.

Commissioners, we value the opinion of the intervenors we have heard from this week and we will grow and we will improve as a result of what we learned. In keeping with our continuous learning approach as nuclear professionals I have no doubt that this will serve to strengthen relations and engagement.

But we have also heard a few things that weren't accurate and they don't reflect who we are as a company or how we operate our station. On this note, and as we have heard you say throughout this hearing, I want to reiterate personally and assure the Commission and the public of our unwavering commitment to the six fundamental commitments:

Number one, upholding nuclear safety. This will always be our number one priority. The nuclear safety risk of the Pickering site is very low and we will keep it that way.

Number two, assuring fitness for service. We will never operate fuel channels, feeders or other major components if we cannot demonstrate fitness for service.

Number three, sustaining an engaged workforce. We care about our people. Staff engagement and motivation will remain a key focus at Pickering to ensure continued safe operations to the end of commercial operation and into safe storage.

Four, maintaining low impacts of operation. We will continue to ensure the environment is protected and that our workers and the public are protected from radiation. OPG has a number of processes in place to ensure that any emissions from Pickering Station remain a small fraction of allowable regulatory limits and they have

been that way the entire operating history of the station.

Number five, supporting transparency and engagement with the public. We will continue to support openness and transparency, as we have demonstrated here every day this week, and will frequently engage with the public.

And finally, continuing to invest. We are committed to continued investment at Pickering and in supporting our communities. This includes additional physical plant improvements through our integrated implementation plan to make a safe plant even safer.

Commissioners, reflecting on what you have heard during this hearing, from you and from intervenors, I would like to highlight a few points and tell you not just what we plan but what we are going to do.

First, we thank the Mohawk of the Bay of Quinte for their intervention, and in response to their request, we commit to posting annual information that demonstrates the effectiveness of the fish diversion system and we commit to more communication with indigenous communities.

And as I mentioned previously, we will release groundwater data for the various site wells after engaging with the Pickering Community Advisory Council for their guidance as to how best to convey such information in

a manner that facilitates Pickering public understanding.

We heard questions about staffing. Our primary strength is our people, they are the ones that ensure safety is never compromised, and I will assure you we will maintain sufficient staffing levels and sustain staffing engagement such that nuclear safety is always upheld, especially as we approach the end of commercial operation. Like you, we recognize and fully appreciate the importance of maintaining this focus and will do so through continuous dialogue with our employees, their unions and other stakeholders. We recognize the need to obtain clarity for our employees and the region, as this impacts them too.

As you have heard firsthand from North American Young Generation in Nuclear and Women in Nuclear, they spoke to the future of this industry with enthusiasm. These and other diverse groups inspire confidence in a highly engaged and dynamic workforce for many years to come. This young, diverse and dynamic workforce will be the key to the future, the future of greenhouse-gas-free nuclear development like small modular reactors which contribute to minimizing the risk from climate change.

We heard a lot of talk about public awareness, including some misconceptions about the safety of nuclear power. We fully support raising public

awareness and a greater understanding of the nuclear technology, its safety and its many benefits, and in particular raising awareness around emergency preparedness. We will take away this week what we heard and work closely with the partners, the province, the City of Toronto, Durham Region and we will look to see how we can improve communications through social media and other means, including beyond the detailed planning zone.

I see this as an opportunity to improve public understanding and grow our social licence and I feel the time to act is now. I envision a series of informational videos to further educate and communicate about nuclear technology and its benefits and to help correct misunderstandings and misconceptions. Our defence in depth video is just a start.

There has been much discussion and interest on the topic of KI pills over the past few weeks. I want to assure you that we are in full compliance with the regulatory requirements. The existing PNERP is solid and if a severe accident happened today we are very confident that KI pills can be delivered to vulnerable groups beyond the detailed planning zone and up to 50 kilometres in a timely and efficient manner.

It is important to bear in mind that in the very unlikely event of a severe accident that there is

time available for the execution of offsite emergency response. This is due to the relatively slow accident progression for CANDU reactors. And similarly, through stockpiling strategies in other jurisdictions, the risk-based provincial KI distribution strategy is flexible and scalable.

Yesterday the CNSC proposed to form a new working group on KI pill distribution. We fully embrace this and commit to actively engage with CNSC staff and others. I am confident this will lead to greater clarity around the details of KI pill distribution for all emergency planning zones in the PNERP, including, one, how, how KI pills are distributed; and, two, who, who is accountable for the distribution during an emergency. We will get this done.

With respect to the 10-year licence term, we consider it to be necessary, acceptable and appropriate. Our supporting case for licence renewal has been presented in various submissions and further discussed at these hearings.

First off, I want to clearly state that a 10-year licence is consistent with a timeframe of the periodic safety review which we have completed for the Pickering Station and it's consistent with the regulatory requirements. This PSR assessed over 70 codes and

standards with a focus on safety and its conclusions confirm and give us confidence for a Pickering licence to 2028.

Second, I want to stress and reiterate that the 10-year licence is the best and most efficient way to take this station through the end of commercial operation and into safe storage. A 10-year licence makes sense as we would not have to come back to the Commission, quite frankly, just to shut down the reactors. Safe storage activities can and have been performed using existing procedures that are already licensed and whose effective use have been proven at both Pickering and Darlington.

So it's important to OPG that a licence renewal be for 10 years in order to provide regulatory certainty so that we can focus on our efforts on moving the station to a safe storage state.

In addition, regulatory certainty will allow us to work with employee groups, external partners and communities to prudently manage the transition.

And finally, a 10-year licence renewal will also align with and enable us a single site licence starting in 2028.

Commissioners, as I mentioned at the opening of this presentation -- I guess at the opening

presentation, if you have noticed during this hearing, the community has a strong vested interest in our operations and we value our relationships with the community. OPG's staff not only work in this community, a great many of us live and raise our families here. We consider it a privilege, not a right, to operate our nuclear facilities in this community and this is reflected in the healthy nuclear safety culture at Pickering. We know it's healthy because we hear it, we see it and we feel it every day with staff. Others see it too. Our external peers have commended Pickering for its healthy nuclear safety culture and this would not be possible without an engaged workforce that is aligned around common goals and it starts with awareness, understanding and commitment by all levels of the organization. And to echo the opening statement from our President and CEO, Mr. Jeff Lyash, the entire OPG company, along with our shareholder, are absolutely committed to ensuring safe operation of Pickering to 2024.

As the site Vice President and licence holder, I am accountable for the safe operation and maintenance of the Pickering Nuclear Generating Station and I have the necessary organizational authority to continue to operate the plant to high standards. We will continuously improve on our strong performance, some of which is the best ever in site history, and will continue

that to our very last day in 2024.

At this time I would like to congratulate you, Ms Velshi, on your appointment as the new President and sincerely thank you, President Binder, for your many years of dedicated service to the public. I wish you all the best in your future endeavours.

Finally, Commissioners, in closing I would like to take you back to when I started this, the start of all these hearings. It is important to remember that at the end of the day nuclear safety is ensured by people. We have pledged six fundamental commitments that are essential to our licence request and, as I said before, who will deliver those? We will, the Pickering team. They are the best team in the industry.

And as I said at the end of the Part 1 hearing, I recall the great sense of pride that existed at Pickering during its early years of operation. I tell you, that sense of pride is very much alive at Pickering today and in fact it is growing. As a team we are committed and aligned to deliver on our mission of improved Pickering performance year-over-year such that our last day is our best day.

And finally, from a personal side, it has been a pleasure and an honour to speak on behalf of OPG in support of the Pickering licence renewal. Commissioners,

we look forward to your decision and we wish you safe travels home. Thank you.

THE PRESIDENT: Thank you.

Well, this is it, so thank you all for your patience and attention and I wish you all a happy Canada Day this weekend. Thank you.

Marc...?

MR. LEBLANC: Yes. I get to close this, thank you.

So I will join my voice to thank a lot of people, all the participants, those here, those linked via teleconference and videoconference, representatives from the licensee, CNSC, and as well all the intervenors who participated actively in the last five days for what I believe in my view was a constructive, informative and very respectful Commission hearing.

Special thanks for those that have taken the time to also support us in these proceedings from the various departments, that is, Environment Canada and Climate Change, they are still with us; the Office of the Fire Marshal and Emergency Management; Fisheries and Oceans; Health Canada; Ministry of Natural Resources and Forestry; the Ontario MECC; and the Ministry of Transport.

But also all of those -- this is a big, big machine that works dans l'ombre, as we say in French:

the interpreters who also have to go through those long hours, they have read all the material as well to prepare themselves and working in the back of the room and keeping everything going; the staff for the official transcript; the webcast crew; the audiovisual and room setup; the security personnel; staff from the Pickering Recreational Complex; the caterer. It seems like nothing, but to feed a lot of people for five days is quite a feat.

And I will say a special thanks to the staff from my team, the Secretariat, who really put this all together.

And this brings to a close the public hearing.

So with respect to this matter, it is proposed that the Commission confer with regards to the information that it has considered these past five days as well as all the written material for the past several months and then determine if further information is needed or if the Commission is ready to proceed with a decision and we will advise accordingly.

Thank you all, and safe travels. And verify for those going eastbound what is the status of Highway 401 that has been closed since last night.

Thank you. Bye-bye.

--- Whereupon the hearing concluded at 2:39 p.m. /

L'audience se termine à 14 h 39