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Safety Commission

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sûreté nucléaire

Public hearing

Audience publique

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Le 4 novembre 2015

Hope Fellowship Church
1685 Bloor Street
Courtice, Ontario

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1685, rue Bloor
Courtice (Ontario)

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Courtice, Ontario / Courtice (Ontario)

--- Upon resuming on Wednesday, November 4, 2015
at 8:37 a.m. / L'audience reprend le mercredi
4 novembre 2015 à 8 h 37

M. LEBLANC : Bonjour, Mesdames et Messieurs. Welcome to the continuation of the public hearing on Ontario Power Generation's application for the renewal of its power reactor operating licence for the Darlington Nuclear Generating Station.

I want to apologize for the small delay this morning. We had small technical difficulties but I think they did great to fix them in a record amount of time.

During today's business, we have simultaneous translation.

Des appareils de traduction 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 minimum three-month

period after the close of the hearing.

Les transcriptions seront disponibles sur le site Web de la Commission dès la semaine prochaine -- no, maybe 10 days, there are a lot of them.

To make the 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...?

THE PRESIDENT : Merci, Marc.

Good morning and welcome to the continuation of the public hearing of the Canadian Nuclear Safety Commission. Welcome also to all of you who are joining us through the webcast and teleconference.

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

I will begin by introducing the Members of the Commission.

On my right are Dr. Moyra McDill and Monsieur Dan Tolgyesi; on my left are Ms Rumina Velshi, Dr.

Ronald Barriault and Monsieur André Harvey.

We have heard from Marc Leblanc, the Secretary of the Commission, and we also have with us here today Ms Lisa Thiele, Senior General Counsel to the Commission.

MR. LEBLANC: So before we start with the interventions, there were some outstanding items that were raised in the last few days that CNSC staff and I think OPG wanted to raise this morning. So if CNSC staff can provide that additional information, please.

MR. HOWDEN: Thank you. Barclay Howden speaking.

So we will have three updates.

The first will be from Mr. Gerry Frappier as follow-up to Dr. Nijhawan's intervention yesterday.

The second will be from Dr. Patsy Thompson regarding our interactions with the Australian Radiation Protection and Nuclear Safety Agency.

The third is regarding discussion on a publication on a child thyroid cancer study.

So I will pass it to Mr. Frappier and then it will go to Dr. Thompson.

MR. FRAPPIER: Gerry Frappier for the record. Thank you.

As mentioned, I would like to make just a

quick correction to some of the discussion yesterday with respect to intervention 15-H8.33 from Dr. Nijhawan. I would like to get this correction on the record.

Yesterday I mentioned that we have a response to Dr. Nijhawan's intervention on our website and this is true. However, I believe I said that on our website we dealt with the 34 recommendations that Dr. Nijhawan had. That is not correct. What it deals with is the description of the accident scenario that he has and his view of accident progression, which we don't fully agree with and we explain our reasons, our rationales why. So hopefully, that didn't cause any confusion. Thank you.

DR. THOMPSON: Good morning. For the record, my name is Patsy Thompson.

As Mr. Howden mentioned, I will follow up on two issues.

On the first day of the hearing I mentioned that because of the number of interventions that raised a concern about the difference between the hypothetical study that CNSC staff did and, in comparison to Fukushima, it wasn't a Fukushima-like accident.

We had requested an independent review of what CNSC staff did and because of the lateness of our request, the memo from the two scientists from the Australian Radiation Protection and Nuclear Safety Agency

only came in this morning. So I have to apologize for introducing this information at this stage. I received the memo essentially during the night and copies have been made for the Commission and copies will be available for the applicant OPG, as well as intervenors.

So the request was for -- UNSCEAR essentially worked with a large number of scientists to look at different aspects of the Fukushima accident and we requested that Dr. Stephen Solomon, who is the Chief Radiation Health Scientist and Head of the Radiation Health Services Branch at ARPANSA, as well as Dr. Gillian Hirth, who is the Director of Monitoring and Emergency Response Section at ARPANSA -- they were respectively the group lead as well as a contributing writer for the UNSCEAR section on public and environmental dose assessment.

We requested that they -- we sent them a copy of the report and requested that they do an independent review of our assessment against the results of the Fukushima Daiichi accident.

They have provided this assessment and my understanding is that working with Secretariat technical staff, they will be available to respond to questions from the Commission later today.

The second item that we wanted to follow up on is an issue that was raised by the intervenor, and

the intervention is 15-H8.46, where there was a mention of a new study on thyroid cancer around Fukushima Daiichi, and I will ask Alan Du Sautoy, who is the Director of the Radiation and Health Services Division, to describe briefly this study and follow-up that we will be doing.

MR. DU SAUTOY: I am the Director of the Radiation Health Sciences Division, Alan Du Sautoy.

CNSC are aware of the Canadian Press article distributed to a number of news media mentioned in the intervention 15-H8.46, where reference is made to one paper, "Thyroid Cancer Detection by Ultrasound Among Residents Ages 18 Years and Younger in Fukushima, Japan: 2011 to 2014" by T. Tsuda, et al, published this month in Epidemiology.

Their conclusion was:

"An excess of thyroid cancer has been detected by ultrasound among children and adolescents in Fukushima Prefecture within 4 years of the release, and is unlikely to be explained by a screening surge."

Essentially, children living near nuclear plants have been observed with 20 to 50 times the number of suspected or confirmed cases relative to an external comparison. We should note, if detected early, thyroid

cancer is fairly easy to treat and is unlikely to become life-threatening.

Apart from this article, however, CNSC also notes that there is at least one conflicting paper by a group at Nagasaki University. The experts in this area are the United Nation's Scientific Committee on the Effects of Atomic Radiation, UNSCEAR.

In 2013, they said:

"...most of the absorbed doses to the thyroid were in a range for which an excess incidence of thyroid cancer has not been observed in epidemiological studies.

Nevertheless, doses towards the upper bounds of the ranges could imply an increased risk for individuals that among sufficiently large population groups might lead to discernible increases in the incidence of thyroid cancer..."

So there is clearly a need for more research and a longer follow-up period before we can have definitive information.

In 2015, UNSCEAR committed to a future program, including evaluation of risks to health from

radiation exposure for leukemia, thyroid cancer, solid cancer and circulatory disease. So CNSC will follow this program very closely and other scientific developments most vigilantly.

I should say the actual developments in Japan, with no early deaths and the possibility of childhood thyroid cancer, do appear strikingly similar to the scenario in the SARP report.

Thank you.

THE PRESIDENT: Thank you.

MR. LEBLANC: I just want to reverify. OPG wanted to add something this morning? No? Yes.

MR. DUNCAN: Brian Duncan for the record. So, for the record, we gave the Secretariat the letter on Coot's Pond last night. I would want to point out that the sampling we do meets the Ministry of Environment and Climate Change requirements. It's not exactly the same parameters that the Lake Ontario Waterkeepers had reflected in one of their slides but it is the sampling I am required to do quarterly and report annually to the Ministry on.

MR. LEBLANC: So we do have this copy and I will provide it to our Secretariat during the break. We will try to make copies for those who want -- that was from the Lake Ontario Waterkeepers' presentation on the Coot's

Pond, which I think is a landfill site.

MR. DUNCAN: Yes. Brian Duncan for the record.

Yes, Coot's Pond was created as a settling pond for the landfill from the original excavation at Darlington.

THE PRESIDENT: Okay. I guess we are ready now to continue with our presentations.

I would like to remind everybody again that we have allocated 10 minutes for the oral presentation, which we hope will be just a summary of the written material because we have read the written material in depth and we would like to engage in a discussion about the written material. So please help us. We have a long day, many interventions, so please stick to the 10 minutes so we can actually engage in some of the written material that was presented.

***CMD 15-H8.2/15-H8.5/15-H8.5A**

Oral presentation by

Canadian Environmental Law Association

THE PRESIDENT: So I would like to move to the first presentation for today, which is from the Canadian Environmental Law Association, as outlined in CMDs

15-H8.2, 15-H8.5 and 15-H8.5A.

I understand that Ms McClenaghan will make the presentation. Over to you.

MS YICK: Good morning. For the record, my name is Claire Yick, counsel at the Canadian Environmental Law Association, also known as CELA. My co-presenter will be Erica Stahl, also counsel at CELA, and we are joined by Theresa McClenaghan, counsel and Executive Director at CELA.

Please note that these slides are also our supplementary submissions.

We would like to thank the Commission for allowing us to present our concerns.

Yesterday, you heard that the public expects OPG to develop a socially acceptable planning basis and this aligns with your mandate to prevent unreasonable risk to society. The question that you need to ask yourself before approving this requested extension is whether you have the information to satisfy yourself that there are measures in place to protect the public to the standard that the public expects.

CELA believes that the Commission does not have sufficient information to approve this licence extension. As we will discuss in our slides and in the discussion following, the deficiencies of the DNERP and

unavailable information lead CELA to recommend a one-year licence instead of the unreasonable and unprecedented 13-year licence.

This would allow for Ontario to develop a socially acceptable planning basis and OPG to submit it to the CNSC under REGDOC-2.10.1. This would also allow time to prepare a detailed evacuation plan responsive to an accident with Fukushima-scale radioactive emissions.

Yesterday we heard a lot of good information regarding safety case, probability studies and engineering studies, but regardless of how we get there, once there is a large-scale release, offsite emergency planning is a last barrier that might prevent or reduce the harm to health and safety of persons. This is the public expectation. We need to know that we can be protected in the event of a large-scale release.

And it is clear to us that the Commission takes offsite emergency planning seriously. You passed Regulatory Document 2.10.1 with new offsite planning requirements. However, according to its own statements, OPG won't be in compliance with this REGDOC until 2017 or 2018.

This REGDOC requires submission of the planning basis to the Commission but this has not yet occurred. This critical information is lacking for the

present licensing decision and we hear that this will occur in 2016.

This is an important point because we have been shut out of the planning process. The Minister of Public Safety in 2013 instructed the provincial Emergency Management Office to consult with the public, including Durham Nuclear Awareness, Greenpeace and CELA, regarding the new planning basis, but to date no consultation has taken place.

As you heard yesterday, early radioactive releases are conceivable and you, as the regulator, have to ask how quickly fifth level depths and defence can be activated, i.e., that sufficient emergency protection measures can be activated. With this in mind, we will focus on evacuation preparedness and potassium iodide distribution.

In its materials, OPG stated that an updated 2015 evacuation times report would be ready in December 2015 and we note that this would be after the current hearing. We asked OPG for that report prior to the hearing but were advised it was not yet ready. However, OPG cited findings in this report on Monday of this week.

Through our persistence, we obtained a document from OPG yesterday at 4:15 p.m. However, upon review it turns out we were provided with a PowerPoint

overview of the study and not the study itself. This has left us unable to critically review and compare the updated study to the previous Durham and Darlington evacuation timing studies.

This information is highly important to your review of the adequacy of the emergency response at Darlington but you do not have the study. As intervenors, nor do we. This means we have not been able to scrutinize and comment on these latest figures.

The Commission must be satisfied that evacuation would be effective as a primary remedy in an INES Level 7 accident. You must also be satisfied that you have seen updated detailed modelling of evacuation timelines as well as logistics.

We heard yesterday from CNSC staff that evacuation bears its own risks. We want to clarify that evacuation itself is not what caused the harm to those evacuated in the Fukushima disaster. Rather, it was a lack of preparation. This resulted in a traumatic, chaotic evacuation.

It had not been anticipated that hospitals would evacuate. Drills had not been conducted and detailed plans were not in place. As a result, some patients were abandoned. Most hospitals in the vicinity were closed and staff left, and some patients were taken to non-medical

facilities where they were not given any medical care.

We address the IAEA 2015 review of emergency preparedness and response at the Fukushima Daiichi accident in more detail in Appendix A of our presentation.

We have heard references to sheltering in various OPG materials but, as Mr. Nodwell told you at the Commission's meeting on KI on October 1st, evacuation is the preferred strategy because it is the only strategy to potentially avoid doses completely.

MS STAHL: Erica Stahl for the record.

The Commission should look at the planning basis as a condition for licensing. The bullet points you see listed on this slide list different aspects of a severe accident that could happen. It is your responsibility to ensure that this plant can be evaluated against these scenarios. As such, you should require OPG to demonstrate that offsite planning in the vicinity of Darlington reactors is based on an expanded planning basis as compared to the status quo.

We are deeply concerned about the credibility of the province's public consultation process on the planning basis, which, to our knowledge, has not yet occurred.

The Swiss approach outlined briefly on

this slide is an example of an evidence-based approach that we submit the Commission should require here.

In Switzerland, publicly disclosed modelling was used in a public consultation about protection of site zone sizes and the measures to be taken within those zones.

Similarly, the IAEA report on emergency planning at Fukushima Daiichi states that in Japan, after that accident, urgent protection zones of around 30 kilometres are being established around each plant, with measures such as sheltering, KI ingestion, food restrictions and evacuation dependent on plant conditions and releases.

The 2015 DNERP, which was provided to CELA on the afternoon that our presentation slides were due to the Commission, says that anyone in the secondary zone can obtain KI on request. This is a step forward but the Commission should require OPG, in conjunction with the area municipalities, to pre-distribute KI to everyone within the secondary zone.

As mentioned previously in our presentation, the updated evacuation modelling has not been provided to us, although a draft summary of conclusions was provided yesterday. We do not have any of the other listed documents on this slide. We still do not have the updated

planning basis based on public consultation.

As such, we submit that the Commission does not have enough information to make a decision under section 24(4)(b) of the *Nuclear Safety Control Act*, nor do you have sufficient information to determine whether the Darlington Plant constitutes an unreasonable risk under section 9. The Commission must be satisfied that it has all of the unavailable information listed on the previous slide before considering the application for a life extension.

Compounding the problem of unavailable information is OPG's lack of transparency, as demonstrated by the failure to provide the updated evacuation times report.

In our 10 minutes we didn't have time to fully address the findings reported in the IAEA 2015 report on emergency preparedness and response at the Fukushima accident, some of which is summarized in Appendix A to our presentation. We hope that there will be more time to review these further in the discussion this morning.

That report raises important questions about decision-making, human behaviour and communications during an accident and they represent the types of findings that must be incorporated into a detailed emergency response plan that would protect people in the vicinity

from a large radioactive release on the scale of Fukushima.

In conclusion, the Commission should limit OPG to a one-year licence subject to strict conditions. A summary of our recommendations is listed here and the full recommendations can be found in Appendix B.

This concludes our presentation. We look forward to your questions.

THE PRESIDENT: Thank you.

Okay, who wants to start? Nobody raised their hand to volunteer. Ms Velshi...?

MEMBER VELSHI: I think it would be helpful if the Ontario Fire Marshal's representatives were here to help answer some of these questions that we have, please.

THE PRESIDENT: I don't know if we are set. Could you come forward and do we have -- maybe if you guys move one seat you can accommodate everybody.

--- Pause

THE PRESIDENT: Ms Velshi...?

MEMBER VELSHI: Thank you.

One of the big concerns expressed by CELA is lack of consultation with the Provincial Nuclear Emergency Response Plan. And I know -- I think it was yesterday when you gave us an update on the provincial plan you did talk about stakeholder engagement and your

consultation plans that you have in the upcoming year. And I recall that at the Bruce hearing we had a similar discussion and, I believe, there was a commitment made that CELA specifically would be involved in the consultation process.

So can you elaborate on what their engagement has been, why has it not been more than what their expectation and I think our expectations are and what your plans are around engagement of what we believe is a fairly key stakeholder in this process?

MR. SULEMAN: Good morning. For the record, Al Suleman. I am the Director of Prevention and Risk Management and the Deputy Fire Marshal with the Office of the Fire Marshal and Emergency Management.

With me today are Mr. Tom Kontra, Deputy Chief of Program and Planning with the OFEM and Mr. Dave Nodwell, Program Manager for Planning and Exercises. I wasn't here yesterday unfortunately. I didn't hear what Mr. Nodwell presented in terms of the context of the provincial role and so on, but I assume that it had been set out.

In response to your specific question, I think you understand that we are in the midst of evaluating our Provincial Nuclear Emergency Response Plan and specifically the planning basis for the PNERP. And yes,

when I met you at the Bruce Power when I spoke to you at the Bruce Power hearings, I did make a commitment that we would seek opportunities to engage further with CELA and other intervenors that had expressed the need for further consultation.

As you would appreciate, we are not yet at the stage of where we can do a public consultation. Our objective is if and when we are ready to do a public consultation we would provide equal opportunity to all stakeholders to engage in the consultation. You know, based on our sort of policies and procedures associated with public consultations we don't want to find ourselves in the position where we are consulting with a particular stakeholder in advance of other stakeholders. Just from the -- we don't want to leave the perception that we are not providing equal opportunity to stakeholders.

So when we are ready to do a public consultation, we would certainly seek every available opportunity to be transparent and have all stakeholders engaged in that consultation. We are just not at that stage at this moment.

MEMBER VELSHI: And I think we were told it would be in -- whether it was the first or second quarter of next year is what your schedule is.

Is there a distinction in your mind

between public consultation and stakeholder consultation, because I think it may have been presented as you already having some stakeholder consultations at the moment.

MR. SULEMAN: Thank you again.

I'm not sure what may have been presented yesterday but we do, as you may be aware, have a Nuclear Emergency Management Coordinating Committee. We see this committee as our (off mic). Good. Are we back on?

So it's made up of various representatives that we had invited to the table to make up this advisory committee. We do involve the advisory committee at various stages of our development. We don't necessarily see that as our public consultation. Other stakeholders that are not part of the advisory committee we would see as being part of the broader public consultation.

MEMBER VELSHI: Thank you.

So over to CELA, and you heard yesterday that that was exactly the plan. What you presented is consistent with that. Does that answer your question on when you will get engaged in the process?

MS McCLENAGHAN: So the expectation, and what Minister Meilleur when she was minister and met with Durham Nuclear Awareness, CELA and Greenpeace indicated, is that the review of the planning basis would be developed with public input, that public input would be sought and

then the planning basis revisions, assuming there will be planning basis revisions, would be developed and then there would be further consultation as usual.

The discussions with a select set of stakeholders is not acceptable, not consistent with ordinary public policy development in Ontario. I am engaged in extensive public policy development in Ontario across many ministries and it's a normal process to involve a wide variety of the public and stakeholders and people with particular perspectives and information to provide, develop the policy documents and then go out for more formal public consultation.

What's happening here, rather, is that the proponent of this project and the other proponents of other plants as well as CNSC staff and emergency staff are having an insular conversation separate from the public about key assumptions that would go into the planning basis. Our concern is that something like the SARP study which as you've heard we feel is inadequate will be the basis for the new planning basis. This is the very type of information that needs to be discussed in the public.

In 1984 -- in 1983 and 1988 Ontario ran two processes, Working Group 3 and Working Group 8 about the planning basis. Those recommendations have not even been acted on.

The planning basis that we have today was set pre-Chernobyl on the basis that we have never had a severe accident anywhere in the world. That's no longer valid. The assumptions behind today's planning basis that are allegedly going to be upheld by the new SARP study are just not sustainable in the face of the Fukushima accident and public expectation.

So the public expectation is that we have a public transparent discussion not only about the kind of accidents that can happen but about the kinds of measures that need to be taken in response to those accidents. We have no interest in a fait accompli being posted on a website in the first or second quarter of 2016 and an opportunity to provide web comments on that or even get together in a room and talk about why we think they missed the boat based on the two years of work they have been undertaking right now.

THE PRESIDENT: Thank you.

Anybody? The Commission? Dr. Barriault?

MEMBER BARRIAULT: Thank you, Mr.

Chairman.

My next question really is for OPG. I guess with regards to REG Document 2.10.1 your date of compliance is 2018. Is there any chance that this could be stepped up and where are you aligned at this point?

MR. DUNCAN: Brian Duncan, for the record.

If you recall, actually we have brought that ahead to 2017. The key here, though, is we are fully compliant with the regulations as they stand today and, as we discussed the other day, the gap to the new REGDOC is largely the software on the real time reporting versus hourly reporting and there is a couple of minor things around how we follow up from exercises that we do.

THE PRESIDENT: I'd like to -- we've been hearing a lot about this noncompliance. CNSC, explain to me how you allow noncompliance or did you give them time to become compliant and therefore they are compliant with your timeline? Please explain.

MR. HOWDEN: So Barclay Howden for the record speaking. I will ask Luc Sigouin to fill in.

But you will recall that the document was originally brought before the Commission in October 2014 along with the accident management and there was significant discussion in front of the Commission with the licensees in terms of the requirements and guidance. And so the Commission said go away and take a look at this.

So we had a workshop with the industry in early 2015 and we were able to put to bed the concerns that they had with 2.10.1 and did not require any changes to the document. So then it was put in.

So what is happening now is when they updated requirements, documents such as this is put in. The transition plan is put in place and OPG has put in their transition plan which is to have full implementation by 2017.

I will ask Mr. Sigouin to just give you a little bit more details on what needs to be done there, but this is our standard process when we update our regulatory requirements.

MR. SIGOUIN: Luc Sigouin for the record, Director of Emergency Management Programs at CNSC.

Just to add on to what has been said by Mr. Howden and by OPG, so OPG is in fact compliant with the regulatory requirements that are in place now. There is no question of that.

When it comes to the implementation of REGDOC 2.10.1, I mentioned yesterday that there are some more administrative in nature type requirements that will be implemented over the next one or two years and that from a staff standpoint we don't see that as an impediment to licensing.

I would like to clarify some of the statements -- a statement that was made by the intervenor about OPG not having submitted a planning basis yet to the province. So that statement is not quite accurate and I

would like to clarify that.

OPG is not required to provide a planning basis to the Government of Ontario, to the province. The province develops its own planning basis. The planning basis that is referred to in REGDOC 2.10.1 is the planning basis that CNSC requires the licensee to develop for their onsite plans. So I can see that there may be some confusion because there is a planning basis for OPG for their onsite plans and the province is talking about a planning basis for their offsite plans.

REGDOC 2.10.1 talks about the planning basis that OPG needs to develop for their onsite plans. There is a clause in REGDOC 2.10.1 that requires the licensee, OPG in this case, to provide the province with any information that they need so that they can develop their plans and their own provincial planning basis.

To our knowledge, and I don't know if OFEM can confirm, but this is not in question. OPG is meeting this requirement and they are providing support to the province as required.

THE PRESIDENT: I think this is a good time to raise an issue that has been in front of us now for a long, long time and we have been circling around. I have two experts and I would like to ask that question. It may get me into legal issues.

That's the role of us, the Commission. You heard about the inside the fence and outside the fence. Inside the fence there is no debate about CNSC's responsibility. Outside the fence -- so I would like to hear from the Office of the Fire Marshall. How do you see our role to make sure that there is a viable, acceptable plan for offsite? What is our -- what do you consider our role to be?

You know there is those who will say, as you hear from them, "Make sure Ontario does that". Well, how do we make sure Ontario does that? I don't want to get into a constitutional debate and I sure don't want to get into a legal debate. All we want to see is that there is a plan, a viable plan that everybody is happy with.

So how do we make sure that there is one in a timely basis? Fukushima happened four years ago. I think it's highly reasonable to expect the Ontario government to have now an updated plan.

MR. SULEMAN: Thank you, Dr. Binder.

And, yes, we are working on updating the plan as you have heard at the last hearing and through the course of this hearing.

In terms of jurisdiction, I mean it's pretty clear about CNSC's jurisdiction inside the fence and I think it's pretty clear about the province's jurisdiction

outside the fence. I think how you sort of bring the two together is the way you have been up to now which is -- and I think back to the REGDOC that you introduced around KI distribution where we had a bit of push and pull about jurisdiction, if you recall.

But we landed on language that I think worked for both jurisdictions whereby you compelled your licensees to work cooperatively with the province and other jurisdictions, municipal and provincial, and sort of recognizing that in Ontario we have, I think, a model to be proud of where we do have a lot of collaboration amongst the facilities, amongst the municipalities and the province where despite some of the language issues around jurisdiction and so on, we do work collaboratively anyway. We have a single end goal in mind and that's safety for the public.

I don't think there is really much more that needs to be done in terms of making the clear distinction, but I just think we need to be sensitive that there is an inside the fence role for CNSC, there is an offsite role for the province and whenever CNSC introduces regulations that compel the licensees to do certain things that's you know, keeping in mind that there is a provincial role.

Sometimes it may seem like you are

stepping into the provincial role but, again, and I go back to the REGDOC in KI, we found common language where, you know, we didn't run into insurmountable barriers about jurisdiction.

THE PRESIDENT: So you raise the KI, so that's a good opportunity. You hear many of the intervenors saying increase the distribution beyond 10 kilometres. It's the health authority of Ontario and you who have decided that 10 is sufficient and the rest is going to be distributed.

So how do you reply to -- to whom this is addressed, to us or to you to increase beyond 10 kilometres, the pre-distribution of KI pills?

MR. SULEMAN: Well, again, I think both. There is a role for facilities and you. You know, again, the REGDOC itself sort of drew the facilities into the discussion and CNSC into the discussion about KI distribution.

I think that was in response to, you know, to Fukushima and to interventions that you have heard previously about the value of having KI distribution within the primary zone and stockpiling within the secondary zone.

So I think you know in terms of addressing that issue about KI distribution even though there were mixed opinions about the, you know, sustainability of such

a program from the provincial perspective, having the KI done through a credible source was of course a significant issue for us.

And we continue to sort of be mindful of that issue and seek opportunities to ensure that when KI is distributed it's not just simply left hanging on somebody's door or left in the mailbox. It is that there is appropriate public education, information and you know dispensing type of information that goes along with the KI pill distribution.

Sorry. I have lost track of your question if you can --

THE PRESIDENT: Well, just do we want -- who will handle as a policy whether you go beyond the primary zone in pre-distribution?

MR. SULEMAN: Again, I think you know, sort of recognizing that, you know, CNSC has already kind of stepped into that field, you know, prior to CNSC stepping into that field the province basically had oversight on the KI issue. But since the introduction of REGDOC 2.10.1, I think we sort of recognized that there is a dual role.

So I am not -- I don't think we can say it's one or the other. I think -- I mean I still see ourselves as having the primary role but I do recognize

that CNSC has an interest as well. And so I see it as a dual role.

MS McCLENAGHAN: Mr. Chairman, if I might, of course you have heard CELA say that in our opinion your role is to decide whether to issue the licence and looking at section 9, looking at section 24, the fact that we don't have an offsite planning basis meeting the public expectations means that you don't have the information especially to issue a 13-year licence.

The fact that a novel proposition that there is a different planning basis inside the plant boundary and outside the plan boundary in my opinion is untenable. We have heard over and over again about the necessity for a close linkage between the onsite authority and the offsite authorities in responding to any accident, I fully agree that during an accident there are distinct roles. OPG needs to manage the accident and be providing information.

But in terms of planning and preparedness in advance, we all need to be working from the same planning basis and we all need to be working from the assumption that things could go seriously sideways and in that case what's in place to respond to such an accident?

Your role is to look at protecting the public. You have to look at all five layers of defence

in-depth. Your jurisdiction does not stop at the plant boundary. That's completely contrary to what the statute tells you to do. It tells you to protect the public and the environment.

THE PRESIDENT: Thank you.

M. Harvey...?

MEMBER HARVEY: Just to continue on that subject, on page 10 at the bottom of the page you can read that Darlington Emergency Plan should plan for worst case scenarios. So what is your worst case scenario? What is your base? Is it what has been prepared by the staff or what can you -- can you comment on that?

MR. SULEMAN: I will ask Mr. Nodwell to speak to that matter, please.

MR. NODWELL: Good morning. Dave Nodwell, for the record.

It's a question that we have been wrestling with and a very good question and it certainly forms a part of the planning basis review, in terms of what is that worst case scenario that we would deal with in terms of a planning basis? If we look at the current -- and perhaps I will speak to the current planning basis that forms the basis for the PNERP as it currently sits.

It provides for both the design basis accident and the beyond design basis accident. That would

be utilizing definitions that have been developed in the CSA and 1600 process.

The basic offsite effect that is considered in the PNERP reflects a serious accident where the dose at the site boundary would be 250 milliSieverts. So that would be the dose received which is a fairly substantial dose.

But the PNERP actually goes beyond that as well and reflects actions that would be required in a more severe accident so where radiation levels are higher, where emissions come faster and things of that sort. So it's reflected in the PNERP in terms of public alerting which is automatic and can happen extremely rapidly. It's reflective of the automatic measures that would be taken in terms of sheltering or evacuation and these are default actions that are pre-identified in the Provincial Nuclear Emergency Response Plan. So in that sense it deals very much with a large and a severe accident.

The planning basis review is looking at that to ensure that it meets the criteria. And I referenced this yesterday in terms of a severe accident that would be comparable to a Fukushima-type accident that would be reflective of a multi-unit accident and so on.

So the PNERP is geared, in my mind, both to that DBA and the DBDBA and goes beyond that and has the

flexibility to adapt as required in the situation.

I hope that answers your question in terms of the planning basis.

MEMBER HARVEY: I am trying to link what -- we had many discussions about the INES Level 7 and what has been prepared by the staff. So I am trying to link those things and this is the interaction that could be between the Office Marshall and the -- so I would like to have your comment, comment of the staff around that, what has been said, for example, did that correspond to what has been done by the staff --

MR. JAMMAL: Ramzi Jammal, for the record.

A couple of things I would like to raise. The KI distribution, by Mr. President talking about with respect to the KI, the KI is one element of the emergency planning basis, it is not the only protective measure.

But I would like to ask directly, Ontario, because Ontario colleagues have not really responded to the question is, there will be KI pills available to the members of the public who need to have the KI being given to them.

And I think the public needs to hear from the Ontario Emergency colleagues; do they have enough KI pill to be distributed in the case of the emergency above and beyond the 10-kilometre zone.

With respect to the INES-7 or not, again, I will question Dr. Thompson, but the radiological impact of the hypothetical study that the staff at the Commission has carried out equates to Fukushima radiological impact that has been measured on the ground.

So we can have the debate, is it INES-7, is it INES-6? What counts is what the radiological impact that was measured at Fukushima, hence, the scenario that was applied by CNSC staff equates to, as it was declared, the INES-7 level.

So the key point here is, what was measured on the ground and was it similar to the CNSC hypothetical study?

I'll pass it on to Dr. Thompson for more details.

DR. THOMPSON: So Patsy Thompson, for the record.

There's been a lot of discussions about the planning basis and the study we did in comparison to the Fukushima Daiichi and nuclear power plant accident.

We talk a lot about, you know, the number of becquerels that were released at Fukushima compared to the source term used in the SARP. We talk a lot about the INES-7 or 6 or whatever it happens to be, but from a nuclear safety and protecting the public and protecting the

environment point of view, the source term is one element, but the most important element is, what are the consequences and exposures to members of the public who would be in the vicinity if an accident did occur.

One of the objectives of the SARP was to look at a severe accident in the context of Canada, in the context of Darlington and look at whether or not the emergency preparedness program as it is -- as it was when the study was done, including the protective action levels that are essentially pre-set in the provincial program.

And so just doing a quick review, if you look at the -- for the 24/1, so 24 hours hold-up, one hour release scenario that we use in the SARP, we have, for example, for Fukushima the adult thyroid doses, the highest dose that was measured for members of the public was 250 mSv to the thyroid.

In the SARP Report, the highest dose to the adult thyroid is 5,470. So the doses are considerably higher in the SARP Report than they were at Fukushima.

In terms of childhood thyroid, the highest dose at Fukushima was 507 mSv, in the SARP Report it is considerably higher.

The same for the whole body doses that would be used for decisions on evacuation and sheltering, the doses projected from the SARP accident are, again, much

higher than the highest doses measured in the public areas at Fukushima.

And so, from our point of view, the doses that were projected from the SARP, the most severe accident which was 24/1, were able to stress and test the provincial program. For example, the protective action levels for evacuation were exceeded up to 12 kilometres in the SARP Study. The same for the thyroid doses, the protective action level was exceeded up to 28 kilometres.

So I think we did a study that allowed us to test and stress the protective actions and the provincial program in the context that is relevant for Darlington.

MS McCLENAGHAN: So, Mr. Chairman --

MEMBER HARVEY: If we do accept that and we say, okay, this is what we're going to use, but you're not the people that will use that, but we have to turn to the marshal office and ask them.

I was saying that despite the fact if we accept that this is correct, that's what we're going to use, but we have to turn to you and say, what are you using? To what extent you will use what has been done by the Commission or is it something that you do yourself?

THE PRESIDENT: So you mention numbers, and it's the first time I hear that you considered -- did I

hear you correct, you said that you are planning for the severe accident at 250 mSv is your planning for major accident and beyond? Are those numbers, those parameters will be in the plan and the consequences from them will be in the PNERP?

MR. NODWELL: Dave Nodwell, for the record.

I'm not sure I'm entirely clear on the question. The 250 mSv is identified as the basic off-site effect, however -- so that's an identifiable figure that has been put into the PNERP, however, the current PNERP goes beyond that, it does not quantify it in terms of dose or dose rate, but in terms of response actions that have been identified in the PNERP, they have been designed to deal with something that is more severe in terms of the dose rate, in terms of the timing and the magnitude of the event.

So those steps are incorporated into the PNERP to deal with releases that are larger or faster than identified in the basic off-site effect.

THE PRESIDENT: So just so I understand, when you say higher doses, will there be examples, numbers in the document that explain this?

MR. NODWELL: Thank you. So in terms of the work that's ongoing, yes, there would be quantifiable

components that have been identified. Certainly looking at the SARP, the health consequences study that the CNSC has conducted, that forms a part of it, but it goes beyond that as well in terms of our assessment of other reports including that published by UNSCEAR in 2014 on the Fukushima accident.

MS McCLENAGHAN: Mr. Chairman, there are a few things I'd like to just deal with, if I may.

The first is that this question about what's the worst accident that we should plan for, is something that's been asked before and, you know, there's a saying that if we don't pay attention to history we're doomed to repeat it.

And I've mentioned this before, but the provincial working group 8 Report is something that you should all read, along with the Royal Society Report of 1986 and the predecessor working group 3 Report. They're small reports, they're actually readable to a non-technical person.

The working group 8 Report said:

"A worst credible radiation emission is defined as the maximum consequences possible from any nuclear disaster within the limits of physical and chemical realities.

There would be no probability limits set to that." (As read)

And then they went on to discuss the kinds of accounting that you would do by taking that approach, including gross human error and external events and very low probability events and public desire to be protected from very severe events.

So that's common sense, that you should say, plan for what could come out of the reactor.

Subsequently, Royal Society of Canada was asked to write a report and it ended up saying that they didn't agree to plan for the worst credible accident, which was partly based on cost issues, but they say that you should plan for --

"We recommend that detailed, detailed emergency planning should be done for accidents resulting from a credible series of events which could occur with a probability of approximately 10^{-7} reactor year, one in 10 million years per reactor." (As read)

What we have today is a pre-defined definition based on the design basis of the plant that we won't have more than 250 mSv.

And then in the current plan there's

recognition, the provincial plan and the Durham plan, that you could have an accident that goes beyond that. It does say that, which is good, it's not quantified as you mention.

In saying that, it then doesn't go on with any detailed planning, there's no evacuation -- there are no evacuation zones prescribed, for example, for the secondary zone.

Contrary to that, Switzerland, as I told you, did undertake detailed planning. They've put out their scenarios with cesium equivalents, so based on numerical numbers, and based on that they changed their previous planning basis, which in their terminology was A-2 equivalent to an INES-4, to their terminology A-4 which is equivalent to an INES-7.

They made a specific change and then based on that they looked at all of the protective action measures and they decided which ones were sufficient as they were today and which ones had to change because of the new planning basis, including things like evacuation and KI distribution.

So, in our submission, the SARP Study which we heard about again, is muddying the waters because what we should be looking at is emissions, what could come out of the plant? We should have a planning basis that

looks at a very bad accident in terms of emissions from the plant, not --

THE PRESIDENT: I think that's what I heard them saying.

MS McCLENAGHAN: No, but they're talking about --

THE PRESIDENT: No, forget about the SARP.

MS McCLENAGHAN: No -- yeah.

THE PRESIDENT: What I heard them saying, they've gone beyond the SARP and they've gone to the IAEA, so I guess we won't know until we see the detail, how much detail you're putting in there for beyond, you know, severe accident.

And when -- just in terms of logistics, when can we, as a Commission, expect to be able to see the latest thinking about your plan?

MR. NODWELL: Dave Nodwell, for the record.

I'd like to point out that CNSC staff have been involved with this process and the discussions and, in a sense, that addresses part of your previous question about the role of the CNSC in this because there's a very strong technical role that CNSC staff are able to provide to us and provide that level of support.

As I mentioned yesterday, it will be going

to the Nuclear Emergency Management Coordinating Committee on December 10th. CNSC staff will be present at that meeting and be able to provide input into it, and we'll have it in advance as well.

So at that -- in that sense, the CNSC would be looking at it within four or five weeks.

THE PRESIDENT: Thank you.

MS McCLENAGHAN: So Mr. Chairman, the public won't be at that meeting, so --

THE PRESIDENT: You have to first agree about what is it we are saying, I think, on all sides here before we can even engage in this discussion.

So when we develop a regulatory plan, there's all kinds of discussion about what should be in there, so we'll see, you know. I think they've got until December. I guess we can see what December will bring before we decide what to do.

And one -- since I've got in the public discussion, in the standard, the CSA standard, how much detail were there on how much detail you have to plan for emergency planning?

Maybe you can help me there.

MS McCLENAGHAN: In my view, the CSA standard is very high level, so when we've reviewed it against the plans, it's very difficult to use it as a

benchmark for the actual plans that are in place because it's so high level, along the lines of you should have a communication plan in place, you should have a planning basis, that kind of thing.

THE PRESIDENT: So there's no value in exploring that for further development, is there?

MS McCLENAGHAN: As it stands, I haven't found it valuable to my reviews. I have found it more valuable to look at the IAEA guidance and the other specific health guidance.

THE PRESIDENT: Thank you.

Dr. McDill?

MEMBER McDILL: One quick question.

How many people do you have working on this, full-time equivalent?

MR. SULEMAN: Full-time equivalent?

MEMBER McDILL: Roughly. I'm not --

MR. SULEMAN: Well, we have --

MEMBER McDILL: A large team, a small team?

MR. SULEMAN: No, it's a modest team. We have Mr. Kontra and Mr. Nodwell oversee the nuclear file, and they have four staff that report to them specifically on the nuclear file. So collectively, we have six people that are on the file in the OFMEM.

MEMBER MCDILL: And do those -- does the staff of four-ish, do they have interaction with other parts of the provincial body that provides information and technical support to them, or are they self-standing and without additional support?

MR. SULEMAN: No. Of course, they're part of a broader group, but their focus is purely on the nuclear file. So when they require input, for example, on exercises that need to be undertaken to test out the provincial plan, for example, of course, they engage with our other elements of our office to develop the exercise and to plan the exercise and to implement the exercise, that sort of thing.

So inasmuch as they're dedicated to the nuclear file and there's a lot of activity that goes on with the nuclear file beyond just working on the new planning basis, of course, there are maybe one and a half people dedicated dealing with FYI requests alone. Just by -- you know, the volume of requests that we have to deal with on an ongoing basis.

But there are other activities that the staff have to undertake.

They are also undertaking training themselves. They participate in international conferences.

But a significant amount of time is being

dedicated to the planning basis and to the review of the provincial nuclear plan.

MEMBER McDILL: Do you feel you have sufficient staff and capacity for this?

MR. SULEMAN: The honest answer is that we're trying to increase the capacity given the demands on the file. And in fact, we have a business case forward to senior management on increasing the capacity into a dedicated nuclear secretariat, so to speak.

So we do have plans to increase capacity. Whether that happens within this fiscal year ending March 31st is to be determined, but certainly the longer-term plan is to increase capacity of that secretariat so that we can sustain, you know, the multiple demands that the file demands on an ongoing basis.

MEMBER McDILL: I wonder if I could ask CELA to comment on that.

MS McCLENAGHAN: It's a multi-faceted issue, developing a planning basis, and in CELA's submission, as you've heard us say, the view of the public about what's a socially-acceptable level of risk is critical to the discussion about the planning basis that is selected and the resources that are then allocated in terms of protecting against that accident.

So I think what has been clear in this

discussion is that every stakeholder is at the table except the highly-interested, informed and affected public like Durham Nuclear Awareness, Greenpeace, CELA, who have engaged constructively on this file, but Emergency Management from Durham Region, from the City of Toronto, the Fire Marshal's office, CNSC staff, the proponents of the plants themselves, the operators are all at the table and there is no representation speaking for the public around the kinds of choices that are being made in those discussions.

So capacity definitely does need to increase; we agree. We have seen in terms of representing Greenpeace on some of those FOI appeals. But it also speaks to the issue of trust and transparency of the department, which has not lived up to our expectations since we met the Minister two years ago, I have to say.

MEMBER McDILL: I'll come to OPG in a second.

CNSC staff, you're providing technical support as required. Do you have sufficient capacity to address this issue?

MR. SIGOUIN: Luc Sigouin, for the record.

So yes, we have been engaged to some extent with OFMEM. We have significant capacity available to put time against supporting them in this file, and we

look forward to having the opportunity to consult with them and provide them additional support as required.

MEMBER MCDILL: Thank you.

And in completing the question, I'll address that also to OPG. How are you finding your interactions with your colleagues opposite?

MR. DUNCAN: Brian Duncan, for the record.

We work very closely with the Office of the Fire Marshal Emergency Management. We work closely with Durham Emergency Management, with the City of Toronto, the DRPS, all of the agencies you would expect would be engaged or involved in a response.

I think, you know, if you look back at when we ran the exercise Unified Response last year, there was 50 some-odd agencies that were engaged in that.

We could not have done that alone. We absolutely had to have support from these other organizations. The support was there, the planning help was there, the scenario development was there.

We absolutely have the capacity to work in our house and work with these other agencies.

MEMBER MCDILL: Thank you, Mr. Chair.

THE PRESIDENT: Monsieur Tolgyesi?

MEMBER TOLGYESI: Merci, monsieur le président.

On page 22 of CELA's submission, there is a note regarding the exercise Unified Response where, according to intervenor, the independent evaluation of exercise reported that there were serious delays in CNSC obtaining needed technical data from OPG during the exercise to support decision-making.

Could you be more specific what you are talking about, and we will ask staff after what are these difficulties.

MS McCLENAGHAN: So as I mentioned there in the independent evaluator's report, it was discussed that this gave rise to difficulty in having a discussion around venting, and so then the recommendation that followed I just included verbatim from the independent evaluator's report, which is to install a direct data feed on the power plant controls in terms of critical technical data.

And if I recall the report correctly, I believe they were faxing data and there were communication -- there was a scenario where there was a communication disruption and/or a single telephone line. One or the other.

So the idea was that we need to enter the modern era in terms of data sharing in order to respond quickly and appropriately during an accident between the

regulator and the operator.

MEMBER TOLGYESI: Staff, could you comment?

MR. FRAPPIER: Gerry Frappier, for the record.

Thank you for the question. I agree with CELA with respect to the description they provided as far as what the concern was.

I want to point out that it is not the only way we get our information, and we do have inspectors on site as part of the emergency team down at the facility, in this case Darlington. But it is -- it was identified as a weakness and a vulnerability, and we are taking steps to modify how we get the data.

We've been working with OPG. We have a working group in place. We've got some preliminary systems up and working already whereby we can -- from our emergency operating centre in Ottawa, we can have direct access to plant information.

We're also improving some of the protocols around which that exchange can happen, but I think it's also important to know that even during the exercise, it was clear that we had what we needed to undertake our mandate.

It wasn't a safety concern, but as CELA

pointed out, it was about time to get into the 21st century. And so those improvements are being made, and if an incident was to happen today, again, we have our on-site staff, we have the capability for getting the information we want and we currently have a preliminary approach to getting it electronically as -- certainly as much data information as we would see needed.

MEMBER TOLGYESI: To the Fire Marshal, did you find any challenges during this exercise that you had communications -- some difficulties or challenges with OPG or with staff or with other intervenors who were participating? Because there was, I think, 54 different organizations involved, which is a huge number. And it could happen that there are some challenges.

MR. KONTRA: Thank you, Mr. Tolgyesi. Tom Kontra, for the record.

During the exercise, I was, in fact, the provincial commander of the provincial Emergency Operations Centre. I found our communications suitable.

The comments about improvements in communications from the provincial Emergency Operations Centre perspective were to be constructive as opposed to identifying shortcomings.

It was to -- as was, in fact, stated, to bring us into the 21st century to increase redundancy in

what we have.

We may be talking about faxes, but we're not talking about the transmission of a paper document. We're talking about the electronic transmission of that facsimile. And we do have a number of redundant systems to speak with our various partners.

CNSC, for example, is represented in the Emergency Operations Centre for the province, just as we heard that they're also represented at the plant.

So the liaison between those various agencies -- and we do have 13 Ministries. We have five federal departments, and we have considerable number of staff, planning staff, logistics and so on.

We have a separate scientific team that deals with the assessment of the particulars of that accident, and all of that information comes in to allow me, as provincial commander, to make an appropriate decision for sheltering in place or evacuation or whatever it happens to be.

As you know from the mechanism, the Medical Officer of Health, using those same informations, will determine whether there's a need for the ingestion of KI tablets, for example. And so I feel the decision-making process which I've continually presented to this Commission is what's important here.

We may talk about numbers in a plan, but no plan survives the first shot across the start line, no plan survives the tornado or the what have you that occurs unless there's flexibility to adapt it. And that's our key support.

As I mentioned yesterday, I think that our flexibility, our ability to make a decision at my level in the provincial Emergency Operations Centre without seeking political input is far ahead of international best practices, so I'm comfortable with the reactions that we had in the exercise and I'm comfortable with our ability to make appropriate decisions in the unlikely event of a nuclear accident.

THE PRESIDENT: I actually share you the importance of the governance model during an emergency on any type of emergency, but it's easier said than done, so I think in December we have a meeting dedicated to the lessons learned from the emergency exercise and we will revisit how you're going to -- as a commander, how you're going to control the 54 agencies that want instant briefing sessions, et cetera, et cetera.

So I'm looking forward to that discussion in December.

MS McCLENAGHAN: And Mr. Chairman, on the top of page 23 of our submission, we further elaborated on

the findings of the independent evaluator and also similar findings from the exercise Unified Response report exactly about that issue, about specifically who is making decisions about protective actions to be taken off site to protect the public and what's the role of the agency, and it was -- agencies.

And it was noted that there was confusion in the role.

And this is a very important point because if you read the IAEA report that just came out that I talked about in the appendix, which I also commend you to read, there's a chapter on emergency planning and preparedness, and very factual account just published this year as part of a five-volume set.

The inconsistency and misunderstanding of the role actually led to some of the issues around both accident progression and protection of people.

For example, venting was delayed and led to hydrogen explosions. There were issues around following orders for cooling because of differences of opinion and differences of understanding of the role of the President versus the TEPCO operator. And finally, the confusion in communication led to mistakes in terms of where people were evacuated.

I highlighted some of the most critical

findings in the appendix, but again, in entering into your role as supervisors of whether the public is protected from nuclear power plant operation, I do commend that you read this report in detail because it becomes obvious that paper plans are not enough, as you say, and how it needs to apply on the ground.

THE PRESIDENT: I think we have the author amongst us here. Mr. Jammal here, I think, wrote that particular section as part of the big post-Fukushima study by the IAEA. The IAEA itself learned a lot about communication and decision-making.

MS McCLENAGHAN: It was a very big group that wrote this report, definitely, and Canada is acknowledged. Absolutely.

But I think that, as the regulator here in Canada, it is a very informative document because, as I said, it does very factually summarize the actual dates and steps and decisions and what the confusion was in particular places.

It's -- it gives a few scanty recommendations, I find, but the real value of it is the actual factual outline of what went wrong, where, on the emergency planning side.

We've heard a lot in your other proceedings about some of the other issues that have led to

the Fukushima action plan, but because we're talking about emergency planning, the last defence in-depth issue, this one, I think, is quite important to really take in.

THE PRESIDENT: Thank you.

Ms Velshi?

MEMBER VELSHI: A quick question for OPG, and then staff.

So when can CELA expect to get a copy of your evacuation study report, which they said they've got the PowerPoint presentation on?

MR. DUNCAN: Brian Duncan, for the record.

You know, as I mentioned in -- on the opening day or opening evening, the report itself -- we have committed to having the report finalized by the end of this year, and we're absolutely on track for that.

I talked about some of the elements of the evacuation study as being hot off the press, and we have the preliminary results. We don't have the final. We're still on track for the final by end of year.

It bothers me, though, that when someone says, hey, you gave us a preliminary copy and, therefore, you're not being transparent. That's not the case.

This report, we just got it, and it's just preliminary. We're trying to get it out as quickly as possible. We'll have a look at it.

The key now, of course, is to go from a preliminary results, sit down with the Ontario Fire Marshal's office, sit down with the MTO, sit down with the other parties and look through the results that this assessment has given us and then vet those results. And that has to happen. That will absolutely happen, but it's all on target for end of year.

MEMBER VELSHI: Thank you.

That's why I asked when as opposed to if because I knew you would.

So turning now to staff, maybe you can help me understand, you know, when we talk about consequences -- this is back to the SARP study as opposed to the emissions.

So other than wind speed and wind direction, so what are some of the other factors that would influence, given a certain amount of emission, what the dose rate would be?

DR. THOMPSON: So Patsy Thompson, for the record.

The -- essentially, from -- once radionuclides are out in the environment, the factors that would need to be taken into consideration is the type of release, so essentially the energy of the release and the -- essentially weather conditions. As you mentioned,

wind direction is one, whether there's precipitation or not. Also, the implementation of protective actions will also have a significant impact on the outcome of the release.

And so as we mentioned earlier, this study did essentially a very conservative assessment of a centre line dose where we assumed that there was -- the wind wasn't variable. It was the most conservative assumption in order to decide on whether -- where the protective actions would need to be implemented. And once they were implemented, then the residual dose was used for the health risk assessment.

But it's essentially the type of radionuclides, whether they're inhaled or deposited on ground surfaces, and so we look at inhalation, skin absorption, what's called ground shine, so the essentially radioactivity from the ground once radionuclides are deposited, also sky shine, so essentially exposure from the radionuclides still in the air.

So there's a number of pathways that are considered to have a complete dose assessment, and the dose assessment is done for the first seven days following the release to have essentially information on which to base decisions.

MEMBER VELSHI: Thank you.

THE PRESIDENT: Just to follow up on this, remind me again where are the guidelines about sheltering versus evacuation? One of the lessons from Fukushima, if I understand correctly, is don't rely on calculation, actually go and do some on-ground measurement. That'll decide what to do.

So is that in Health Canada or in the province, in both?

DR. THOMPSON: So Patsy Thompson, for the record, and perhaps the province can add details.

So Health Canada has guidance on protective action levels that, as we mentioned, they're in the process of updating. But the provincial plan actually has the dose bands that would be used for evacuation, sheltering, and they have a dose for thyroid blocking as well, and those are the numbers that we've used.

THE PRESIDENT: So as the commander, you will have sort of well understood kind of the parameters to operate in helping you make a decision?

MR. KONTRA: I think, as Dr. Thompson says, we do have some basic guidelines in our planning, and I use the guidelines to receive advice from the scientific section on whether we have reached that threshold.

That threshold is conservative, and I think the important thing to note here is that we can talk

about worst cases, but our reaction happens at a very conservative, low level in comparison. Therefore, if we react at a lower level, then in a worst-case scenario we're also already reacting.

So we're prepared to do that, and we will in every case, just as you've suggested, deploy additional sensors to determine the full extent of the area. It's not sufficient to just prognosticate with calculations based on wind and atmospheric conditions, but you have to go out and actually do measurements and report back and allow the scientific, technical staff to assess those, and use that in a program to design the parameters -- or rather the boundaries of the area that we would like to evacuate or shelter, or whatever the decision happens to be.

So while we have default lines on a map for sectors 1 to 18 in Darlington, as opposed to the comment earlier, we have similar default lines in the secondary zone -- much broader, not as narrow -- and we use those default lines as a default until we get full assessment of exactly what area is affected, and we will use that full assessment to extend to the secondary zone, or even beyond if necessary.

With atmospheric conditions, we don't know ahead of time whether the emission goes straight up and gets carried -- as we heard in Chernobyl, my homeland of

Hungary, 250 kilometres away was affected.

So we don't know until we get some real readings as to exactly how broadly you need to react, but we have the mechanism, as I keep saying, to react to both the default -- conservative -- and to the actual of the situation.

THE PRESIDENT: Thank you.

Questions?

MS McCLENAGHAN: So, Mr. Chairman, on that point, again in the appendix to our presentation we noted among the lessons learned was the need to pay attention to plant conditions in making decisions on evacuation, because the modelling actually predicted the complete wrong -- the retroactive modelling. It hadn't been done in advance, but they found if they had done it in advance they would have predicted the wrong direction. So that adds to your point about on- the-ground monitoring, and also the necessity to pay attention to plant conditions so that you're making decisions to evacuate people and avoid harm.

I'm sure Mr. Kontra doesn't mean to imply you would wait till you're actually reaching those action level thresholds on the ground. You're using all the information you have to get people out of the way of harm.

MR. DUNCAN: Mr. Chairman, Brian Duncan, for the record. Thank you.

You know there's a lot of information in the intervention that talks to lessons learned, and I have to tell you that's why we do an exercise that size. A first-time exercise, thousands of people, many agencies, if we had come out of that after three days with no lessons learned we wouldn't have done our job.

The whole idea behind something like that is to look at all the elements. Overall the exercise was a success. We achieved what we set out to. Were there lessons learned? Absolutely. Are we going to do something with those? Absolutely.

Will I have a direct feed from my main control room to the Ottawa office? No. I'll have something equivalent, though. I'm not going -- you know we'll talk about cyber security I'm sure tomorrow, but direct ties to the control room is something that you will not see.

What you will see, though, is the equivalent, so that real-time information can be made available to those agencies. And that's the learning that comes out of those exercises, and I think that's a good thing.

THE PRESIDENT: Any questions?

Mr. Tolgyesi.

MEMBER TOLGYESI: One more, Mr. President.

On page 11, the CELA mentioned that "a serious lack of clear information on sheltering in the emergency plans applicable to Durham." They are talking about type of protection level depending on the shelter type and who should be where the shelters are.

Do you have inclusions in the plan, emergency plan, where this is specifically detailed?

MR. KONTRA: Tom Kontra, for the record.

Thank you, Mr. Tolgyesi.

We have some basic guidelines, and we make decisions, but I think the important aspect of your question is our public education program. If you read various reports -- I've read one in particular which is rather alarming, which would indicate that unless you take tape and seal off all the cracks, which of course would mean that you're limiting your oxygen supply in the first place, you cannot possibly rely on sheltering in place.

The more conservative reports -- or the more favourable reports would indicate that all you need to do in sheltering is to cut off external supplies, so air conditionings and so on, which make it difficult, particularly in the winter, because our heating system requires external supplies. This, I think, is principally why the province prefers evacuation as the major protective action.

But, yes, we do have some basic guidelines, and we are talking about the benefits of sheltering, and how to in our public education program.

THE PRESIDENT: But you know the Fukushima lesson that preemptive evacuation can cause its own problems.

MR. KONTRA: Absolutely. Absolutely.

THE PRESIDENT: So it's a real balancing act when you make the decision.

MR. KONTRA: And that's why I get the big bucks to make decision, and not panic.

THE PRESIDENT: And I'm glad you're making it, not us only.

--- Laughter / Rires

MR. KONTRA: I've heard a lot of other people say that. Thank you.

MR. LEBLANC: Dr. Binder, Health Canada is on the line. I was wondering if you wanted any commentary from them in terms of the guideline work that they do. They are available if the Commission wants to --

THE PRESIDENT: Well, absolutely. They are the guardian of the Federal Nuclear Emergency Plan. So Health Canada, over to you.

MR. AHIER: Hello, can you hear me?

THE PRESIDENT: Yes, please go ahead.

MR. AHIER: Yes, it's Brian Ahier, Director of the Radiation Protection Bureau, for the record.

Yeah, we've been online for the last couple of days and available to answer questions, so we can provide information on where we're at with respect to our plan or the guidelines if there are any particular questions that you do have in that regard.

THE PRESIDENT: Go head, give use, you know, a short: where are you in updating the federal emergency plan.

MR. AHIER: Brian Ahier, for the record.

In terms of updating the federal emergency plan, that plan was revised significantly following the Fukushima event. It was endorsed by our federal committee of deputy ministers in October 2012, with the direction to test that in a full-scale nuclear emergency exercise, which we successfully did during Exercise Unified Response.

So that plan has been updated based upon the lessons learned from Fukushima, it's been fully integrated with Public Safety's Federal Emergency Response Plan and it has annexes that support our interactions with the provinces, and in particular the Province of Ontario.

So that plan is up to date. It's been tested in Exercise Unified Response. The conclusion of the

exercise is that the concept of operation was sound. Clearly, as was mentioned by some of the other participants at the meeting, there were best practices identified, as well as lessons learned. We are going through the process of actioning those, and we would be happy to report back more on that at, as you mentioned, the December meeting that will attest to the outcomes of Exercise Unified Response.

There's been some previous discussion around the Health Canada guidelines. Those have been in development to take into consideration not only our experience from the Fukushima response, but also the latest international guidance from the International Commission on Radiological Protection and the IAEA, though we've gone through two rounds of consultations with our partners and we're in the process of wrapping those ones up as well.

What the federal plan is? That plan is, of course, available on the Health Canada website for any of the participants that go there and get that plan and look at that.

THE PRESIDENT: Thank you.

Anybody else before we give you...?

MEMBER VELSHI: I just have one closing comment.

THE PRESIDENT: Go ahead.

MEMBER VELSHI: So I just again want to reiterate to the Fire Marshal's office, if you looked at our interventions more than 80 percent expressed concerns about the planning basis for the emergency plan, that I think it's in everyone's best interest that you engage folks like CELA or Greenpeace early on on the planning basis, as opposed to after you've got the plan, the draft plan, ready for consultation.

As you've heard, they don't want to be involved when they deem it to be a fait accompli. So, again, just something for you to think about very seriously, I suggest.

THE PRESIDENT: And since we are joint partners, I heard, in this, you know that we never finalize our documents or our modus operandi without consultation, formal consultation, in public hearings such as this. We've been talking now about emergency management in this fora now for quite a few meetings. In practically every meeting it's a big issue that needs addressing, so this will continue.

MR. SULEMAN: Thank you.

I very much appreciate the comments, and from our perspective, of course, we have to be respectful of process, because we have kind of internal processes that we have to follow. We have legal considerations in terms

of releasing the draft planning basis to one stakeholder and not another stakeholder.

So there are various considerations that we have to consider. And, again, I would say that we will seek opportunities to engage with stakeholders where appropriate and we'll seek those opportunities where there's equal access to all stakeholders.

THE PRESIDENT: Okay, thank you.

Well, we actually provide you with a good vehicle because we are very inclusive. Anybody who wants to come in front of us, all they have to do is write to us. So I invite you to use this as a tool also.

Any other questions?

Over to you.

MS McCLENAGHAN: Well, thank you, Mr. Chairman.

I think it would be a good idea for the Commission to hold a hearing specifically on the planning basis. Much as you've done on KI distribution, I would submit you should look at the history of the development of the planning basis in Canada, some of the reports I mentioned, look at what's being proposed in other countries, get specific information from the actual conductors of those plans, and open it to interventions.

And ask those specific questions, because,

going back to the jurisdictional question you posed earlier, it is your role, as regulator of this facility, and all the other facilities like it, to make a determination as to whether there's reasonable risk to the public.

And the public has expressed their view that until there's detailed planning, sufficiently resourced and proven to be effective, that response to an INES 7 accident like that at Fukushima, i.e. the emissions -- not just dose, but the actual emissions -- we have a much bigger population here -- the public will feel that we are not being adequately protected.

It's a serious issue of credibility and trust both in the regulatory process and for the operator, as well as for the emergency planners in the municipalities where the plants are located and the operators of the plants.

And we've pointed to a model that we though worked well in Switzerland. Other countries have also reviewed, publicly reviewed, their planning basis. I think we can only gain from that, and I think it would cut through some of the dispute about terminology that we keep hearing about what we're actually planning for, and I think that's really what's needed.

The public needs to have a clear

understanding, based on quantifiable information like emissions on a cesium-equivalent basis, as to what's being planned for.

THE PRESIDENT: Thank you.

We are good to continue?

--- Off microphone / Sans microphone

THE PRESIDENT: Okay.

So I'd like to move to the next submission, which is an oral presentation by the Mississaugas of the New Credit First Nation as outlined in CMD 15-H8.4, and I understand that Chief LaForme will make the presentation.

Chief, can you hear us?

CHIEF LaFORME: I can, and good morning.

MR. LEBLANC: Good morning. We apologize for the delay, Chief LaForme. You may proceed. Thank you.

CHIEF LaFORME: I totally understand, and thank you for the opportunity.

***CMD 15-H8.4**

Oral presentation by

Mississaugas of the New Credit First Nation

CHIEF LaFORME: Thank you, President Binder, and good morning.

As you have already stated, my name is Chief Brian LaForme, and I'm the Chief of the Mississaugas of the New Credit.

With me here today is Mr. Mark LaForme, he's the Director of the Department of Consultation and Accommodation for New Credit, and Ms Deanna Dunham, Director of our Department of Media and Communications for the Mississaugas.

President Binder, members of the Commission, Commission Staff, all in attendance, I am very pleased we are together, even if by teleconference, for conducting this hearing within our traditional territory of the Mississaugas First Nation, formerly the River Credit Mississaugas.

I welcome all of you to the traditional territory of the Mississaugas of the New Credit First Nation, and at this time I would like to inform the Commission that the Mississaugas of the New Credit did not receive participant funding from the Canadian Nuclear Safety Commission to allow us to prepare a written submission and to prepare for and participate in the public hearing.

In the interest of time, as the Commission is in possession of our written submission identifying our concerns and our ongoing engagement on this project, I will

keep my oral presentation brief.

Mr. President, I am not providing this oral presentation to offer the support of my community for this project, nor am I expressing opposition from my community against this project.

My intent in providing this oral presentation is to underscore the fact that the Mississaugas of the New Credit First Nation are certain that this project has the potential to adversely impact the interests, and indeed the aboriginal and treaty rights, of the Mississaugas of the New Credit First Nation. However, I do wish to note that we are working closely with the Ontario Power Generation and Darlington Nuclear Generating Station to reconcile the concerns of the Mississaugas of the New Credit.

As well, from time to time, we also make our concerns, interests and rights known to the Canadian Nuclear Safety Commission, and it has been our experience that the CNSC is ready to assist in every way it is able to. The Canadian Nuclear Safety Commission Staff deserve to be recognized for their efforts and commitment to the transparency and integrity of the process and their willingness to assist.

I am confident the Canadian Nuclear Safety Commission understands the aboriginal rights are held

communally and refer to practices, traditions and customs that were practised prior to European contact. Examples of aboriginal rights include right to fish, hunt and trap on traditional lands, including the right to subsist on these resources. Aboriginal rights may, and ordinarily do, include cultural practices.

Canada has recognized and affirmed aboriginal rights under section 35.(1) of the *Constitution Act, 1982*. Aboriginal rights are grounded in recognition that long-term use and occupancy of the land by aboriginal people who were resident in Canada prior to European arrival and flow to our descendants on this basis in perpetuity.

My presentation is also intended to inform the Commission that the Mississaugas of the New Credit First Nation and the Ontario Power Generation and Darlington Nuclear Generating Station are engaged in positive and substantive discussions to mitigate or otherwise address the impacts of these rights and interests identified by the Mississaugas.

Ultimately, my presentation is simply to affirm and make known for the public record that the Mississaugas of the New Credit First Nation indeed have aboriginal title and rights and interests that may be significantly and adversely impacted by the project, and

therefore must be recognized, honoured and addressed as part of this process.

In our written submission we have identified specific areas of potential impact and concerns to the Mississaugas' rights and interests. Also, we have been forthright in recognizing the positive relation between the Mississaugas and the CNSC, the OPG and the DNGS to address these potential impacts and concerns.

As previously stated, I wish to briefly share our experience with the CNSC, Ontario Generation and the Darlington Nuclear Generating Station. All in all, it has been encouraging. While we have yet to see direct community benefits as a result of the development and substantive and meaningful approaches and methods for reconciliation with my community, at this point we are cautiously confident we are engaged in ongoing discussions with OPG, DNGS to achieve exactly this.

For the Mississaugas of the New Credit, the basis for reconciliation between the Mississaugas and the OPG and DNGS is the extended generalization (indiscernible) to have access to the land occupied by the DNG and it's resulting in a historic disconnection from our traditional land disconnect from knowledge of our traditional territory built upon generations of living off the land and the waters within.

While we no longer have the unobstructed access to the land for traditional use, there remains potential ongoing impact to the aquatic habitat in the waters within our traditional territory, waters to which we hold deep cultural connections.

We seek to protect our waters and the lands under those waters. In fact, while not identified in detail in our written submission, I am now able to confirm that the Mississaugas of the New Credit First Nation is submitting an aboriginal claim to the Government of Canada and Ontario asserting our "Unextinguished Aboriginal Title to all Waters and Lands Under Those Waters Within our Traditional Territory," in other words unceded "OWNERSHIP" of the waters and the lands beneath them.

As such, with respect to the DNCS Project, the Mississaugas of the New Credit First Nation has a paramount concern specific to our assertion of Unextinguished Aboriginal Title. Further, our rights and interests in surface and groundwater quantity and quality, aquatic ecosystems, fish habitat and aquatic species-at-risk representing the biodiversity of these ecosystems are undoubtedly areas of significant concern to my community.

We also maintain an interest in the stewardship of these unceded waters and, given the

potential impacts of the continued operation of the DNGS on the Mississaugas of the New Credit First Nation Aboriginal Rights and interests with respect to the health of the waters within our Traditional Territory and more particularly of Lake Ontario, including fish and fish habitat, stewardship is of utmost importance to the Mississaugas.

In this regard, the Mississaugas of the New Credit First Nation expect meaningful engagement with DFO and CNSC specific to consultation and accommodation processes for the DNGS impacts on fish, primarily related to the facilities' large-scale cooling water system using water from Lake Ontario and with regard to active Mississaugas of the New Credit First Nation participation in aquatic system mitigation, compensation and habitat enhancement projects.

We have recently had preliminary discussions with OPG/DNGS with regard to the Independent Environmental Monitoring Program and the involvement of Mississaugas of the New Credit First Nation in this program. We anticipate continued discussion specific to this opportunity. At the very least, Mississaugas of the New Credit First Nation expect to receive and have opportunity to review and comment on compliance reports from DNGS resulting from the IMP.

A concern for potential impact of the rights and interests of the Mississaugas relates to the transport of nuclear waste through and across the Mississaugas of the New Credit First Nation Traditional Territory. I would point out that this concern is shared by our sister Mississauga First Nations.

It is our understanding that the safe and secure long-term storage of irradiated nuclear fuel is a significant problem. We have learned that irradiated nuclear fuel contains a mixture and host of extremely toxic radioactive materials. We have come to learn that this mix of radioactive poisons is highly capable of fatally injuring a large number of people and that it will remain dangerous for periods of time that extend far beyond that of human history.

The radionuclides in irradiated fuel are also potentially harmful to other living things and hence to our mother the Earth. Needless to say, an accident resulting in the release of the toxins into the environment during the transport of this waste would be highly catastrophic.

Again, the Mississaugas of the New Credit First Nation and the OPG/DNCS are having discussions regarding this highly significant and potentially dangerous concern as it affects not only the Mississaugas of the New

Credit First Nation Traditional Territory but humankind in general.

Mr. President, I will conclude my presentation by thanking you and the Commission for this valuable opportunity to present the concerns of the Mississaugas of the New Credit First Nation to you directly through oral presentation.

Finally, I would again point out that to date the relationship between the Mississaugas of the New Credit First Nation, the Ontario Power Generation and the Darlington Nuclear Generating Station is one that is respectful, positive and in the end hopefully mutually beneficial and productive.

Thank you, Mr. President.

THE PRESIDENT: Thank you. Thank you for your submission.

Questions? Dr. Barriault?

MEMBER BARRIAULT: Thank you.

Chief LaForme, do you feel that OPG is doing enough to protect your traditional hunting rights and fishing rights with regards to the emissions from the nuclear generating station?

CHIEF LaFORME: I will ask our Consultation Director to answer that question because he is thoroughly involved in those discussions. So I will allow

him to answer that.

MEMBER BARRIAULT: Thank you, Chief.

MR. LaFORME: Thank you, Chief. Thank you, Mr. Chairman, and thank you, Commission.

The question, as I understand it, is with regard to the protection of our aboriginal and treaty rights with regard to the emissions from the Darlington Nuclear Station; is that correct?

MEMBER BARRIAULT: That's correct.

MR. LaFORME: Yes. We are having continual discussions with the OPG and with Darlington Nuclear and these concerns have been raised by the Mississaugas of New Credit and we are comfortable that the OPG and Darlington Nuclear Generating Station are doing everything possible to mitigate any impacts on our aboriginal and treaty rights, specifically with the emissions but generally with the overall operation of the Darlington Nuclear Station.

MEMBER BARRIAULT: Thank you, Chief.

Thank you, Mr. Chairman.

THE PRESIDENT: Anybody? Monsieur Harvey?

MEMBER HARVEY: Yes. At the end, in the conclusion of the written submission when the Mississaugas of New Credit say they really appreciate the meaningful engagement of CNSC and OPG, I would like to hear by OPG and

by the staff what that means for them, that meaningful engagement.

MR. DUNCAN: Brian Duncan for the record.

I think what it means to us is that we have an open and honest dialogue in relationship with the Mississaugas of the New Credit First Nation, we work together on issues of common interest, that the relationship we have today is sustained and it continues to be positive, it continues to be meaningful going forward.

We have talked before about a social licence to operate this power plant and that extends to the Mississaugas of New Credit as well to the other members of the community. It is very important that my ability to operate this power plant, our ability to continue to operate this power plant that we sustain these relationships.

MR. HOWDEN: Barclay Howden speaking.

We have quite a bit of interaction. I am going to ask Kim Noble to provide you more.

MS NOBLE: Good morning. My name is Kim Noble, I am the Team Leader for the Aboriginal Consultation and the Participant Funding Programs at the CNSC.

We have been meeting with the Mississaugas of New Credit for a few times now over the last couple of years. To follow up on Mr. Duncan's comments, I think the

meaningful part comes from the dialogue, and that meaning that it's a two-way dialogue, that it is not just information being provided by our staff but we are listening to the concerns of the Mississaugas of New Credit and we are listening -- we are learning more about them, we are learning about their territory, what is important to them, and we are participating in some of their cultural events that they invite us to.

So we are very committed and they know that, that we are going to continue coming into their community and have them participate in our programs as they are interested. We have talked to them about the independent environmental monitoring program, continuing monitoring opportunities at the CNSC and we will continue to provide that information and continue to learn more about them.

THE PRESIDENT: Thank you.

Anybody else?

Well, it sounds like a good working relationship.

Chief, any final words?

CHIEF LaFORME: I just want to thank you and your Commission for allowing our oral presentation and we will continue to work with the parties of the day to come to a (indiscernible) conclusion.

So again, I just want to thank you and your committee. Thank you.

THE PRESIDENT: Thank you. Thank you very much.

***CMD 15-H8.15**

Oral presentation by Canadian Nuclear Association

THE PRESIDENT: I would like now to move to the next oral presentation from the Canadian Nuclear Association, as outlined in CMD 15-H8.15.

I understand that Dr. Barrett will make the presentation.

DR. BARRETT: Good morning, Commission Members. My name is John Barrett and I am the President and CEO of the Canadian Nuclear Association. I am here today along with Peter Poruks, our Manager of Regulatory Affairs. Our thanks to the Commission for the invitation to have this opportunity to speak to you today.

We are here on behalf of the 60,000 Canadians who work directly or indirectly in the nuclear industry. These men and women mine and mill uranium, build and operate nuclear reactors, manufacture fuel, generate electricity and advanced medicine through lifesaving diagnostics and therapies. Our members maintain a deep

commitment to the safety of their employees, workplace and the communities around them. They are committed to protection of the environment.

I would like to state our support for Ontario Power Generation to renew its power reactor operating licence for the Darlington Nuclear Generating Station. OPG is requesting a renewal for a term of approximately 13 years, to December 1, 2028.

Granting a licence for this period would allow OPG to complete refurbishment activities for all four units at the site and ensure Darlington will continue to provide safe and secure electricity to Ontario for decades to come. The provision of a 13-year licence would allow all of the refurbishment activities to be completed under one set of regulatory requirements and this would allow work to proceed in the safest manner possible.

The safest and most efficient way to refurbish four reactors is to have the same plant design changes apply to each unit. If the licence requirements change along the way, either due to new licence conditions, new codes or the outcome of a periodic safety review performed partway through, this injects new requirements for different designs, different components and significantly impacts the project.

OPG has taken several years to plan the

work for the next 13 years and now they need to execute that plan. Issuing an operating licence for 13 years would bring Canada closer and in alignment with the experience internationally, where multi-decade licences are the norm, often for the duration of the plan's operating life. Countries that do so include Belgium, the Czech Republic, France, Germany, Hungary, Japan, the Netherlands, South Korea, Sweden, Switzerland and the United Kingdom.

Additional factors support this request. OPG has completed comprehensive reviews examining operations to 2055. These include an environmental assessment and an integrated safety review.

The environmental assessment assessed the effects on the environment as a result of refurbishment and continued operation for 30 years. It concluded that activities at the facility were not likely to cause significant adverse environmental effects, taking into account planned mitigation measures. A follow-up program to the EA was developed in order to verify the assessment's conclusions and determine the effectiveness of the mitigation measures.

OPG completed an independent safety review for the Darlington facility. This systematically reviewed the plant's design, its current condition and how well it compares to modern codes and standards. The Darlington ISR

showed that the current state of the plant and its performance comply closely with modern codes and standards and that the facility utilizes nuclear power plant best practices in this regard.

Further, a global assessment was performed by OPG evaluating the EA and the ISR results to provide an overall risk judgment on the acceptability of the station's further operation. It looked at both the adequacy of actions to be taken as well as the timing for their implementation.

The global assessment recognized Darlington as a top-performing station with robust design, strong engineering operations and maintenance programs, programs that incorporate continuous improvement and a strong safety culture practised by management and by staff.

Now, let me turn very briefly to operational performance.

The station's continuous improvement plans are grouped into four cornerstones: safety, equipment reliability, value for money and human performance.

Operational practices are regularly benchmarked and evaluated against top-performing nuclear facilities around the world. In 2012, Darlington was recognized by an international peer evaluation as one of the top-performing stations in the world. And in 2014, a

subsequent peer evaluation confirmed this high level of performance. Both assessments were performed by the World Association of Nuclear Operators, which includes all the operators of nuclear power plants in the world.

Regarding safe operations, the Darlington staff has worked 4 million hours without a lost-time accident. High levels of reliable performance clearly help to ensure employee safety and employee safety contributes to high reliability, creating a virtual circle.

The Canadian Nuclear Safety Commission's most recent assessment of Canadian nuclear power plant performance gave Darlington, for the seventh straight year, an overall integrated station rating of "Fully Satisfactory." Such rigorous regulatory oversight by the CNSC provides additional confidence that operations at the station are conducted at the very highest levels of safety.

OPG undertakes numerous activities to ensure that the public is kept fully informed about developments at the site. For example, OPG recently hosted several open houses at Darlington. These events were widely advertised in the community and Toronto. Over 3,500 members of the public attended these sessions, which included a tour of the refurbishment training mockup facility.

A community newsletter is distributed

three times per year to over 100,000 residents and businesses in the Municipality of Clarington and parts of the City of Oshawa. OPG provides access to key documents on the company website, demonstrating its commitment to openness, while providing the public important information about its operations.

Nuclear energy is an important component of our electricity system in Ontario. The four units at Darlington alone produce 3500 MW of electricity, which is 20 percent of the province's total electricity requirement. This supports our industry, lights and heats our homes, powers our modern economy and it is clean energy.

In conclusion, the Darlington Generating Station is a safe plant. Extensive analysis and evaluation document this fact. It is further evidenced by rigorous plant visits and audits conducted by peer review. Moreover, the CNSC has rated the station's performance as fully satisfactory, a high accolade indeed.

Darlington continues to be one of the best-performing nuclear power plants in the world and OPG has demonstrated it is qualified to operate the Darlington Station safely. It has made provisions for the protection of the environment, the health and safety of the persons at the plant and in the surrounding communities, and the appropriate and robust security measures to support safe,

reliable operations.

The power produced from Darlington's four reactors plays a major role in the Province of Ontario's long-term energy plan. In accordance with this plan, OPG is making a significant investment to extend the operating life of the station for an additional 30 years of emissions-free electricity.

Accordingly, the CNA supports the extension of the licence for the period requested by Ontario Power Generation.

Thank you, Mr. President.

THE PRESIDENT: Thank you.

Monsieur Tolgyesi?

MEMBRE TOLGYESI : Merci, Monsieur le Président.

Dr. Barrett, on your first page you are saying that:

"Internationally, regulatory practice often is to issue long-term licences, many times for the entire life of the plant."

What is "entire life"? When you say you install a plant and it's going for 30 years or it includes some extensions and then the licence is okay for all that life, even extend the life considering some conditions or

hold points or whatnot?

DR. BARRETT: In using the term, the life of the plant would be understood in the context of the particular technology supporting it. So we have the CANDU technology and there the life of the calandria is rated as it can be up to 70-80 years in existence. The refurbishments allow the continuation to reach that full life period.

So I would answer by saying part of that is flexible. It depends on the intentions of the operator to maximize the full life potential of this particular type of technology and reactor and undertaking the necessary refurbishments to achieve that.

I can't put a precise number on it because one of the technological innovations and improvements going on in the industry is to really show how you can extend the period between refurbishments, which offers greater reliability, and of course there is also a financial business investment decision about being able to get electrical power over a greater period of time for your refurbishment.

So again, I would just simply say that these other plants use different technologies but the important point here is that a longer-term, more than five years, licence is not unusual in countries with whom we

usually, Canada, associate ourselves as being like-minded.

MEMBER TOLGYESI: So what you are saying is 80 years for calandria. It means that a nuclear power plant could be refurbished two or three times and still, you know, be adequate and respond to regulatory requirements?

DR. BARRETT: Again, I would defer to those who have the engineering background in the audience, either in CNSC and OPG, but I know from one of our members, Candu Energy, now SNL-Lavalin Nuclear, that they -- their view is with, again, the CANDU technology, not the light water reactor and other types of technologies -- that they see a business case for a reactor that today would be designed to live, so to speak, for 80 or 90 years, would have two refurbishments throughout its life, and therefore, for anyone who may be buying this technology and operating it, you have a prospective 80 to 90 years.

A lot of the work is going into the reliability and safety of extending the life and adding a year or two years more into the operation before refurbishment, again to reinforce the business case, and doing that totally within the safety envelope.

THE PRESIDENT: Given all the years you spent in Vienna, in fact you were Chairman of the Board of Governors for one year or so, I am going to ask you a

really tough question. How do you rank Canada's nuclear framework, safety vis-à-vis other countries?

DR. BARRETT: One of the things I saw -- the Chairman is referring to my time as the Canadian Ambassador to the Atomic Energy Agency and during that time I received quite a bit of support, or our delegation did, through not only members of the industry who gave their technical expertise but certainly from the Canadian Nuclear Safety Commission staff, who are very much engaged in the work that goes on in the IAEA to develop standards that are applicable throughout the world or as far as possible into other jurisdictions where we may feel that questions of safety and security and safeguards, the big three important elements of the work in the civil nuclear space, that they have the most robust and rigorous forms of support and regulation in that area. You, Mr. Chairman, are a part of and have chaired the Senior Regulators' meetings to try to enhance that.

My observation, without going into so much detail to bore everyone here, but Canada has always played a very vigorous role. During the Fukushima accident we were very -- the Canadian delegation was working very much behind the scenes to obtain as much information as we could about what happened. That was happening in Canada. We had these daily exchanges of view from our Embassy in Tokyo to

the operations in Ottawa, to Vienna, et cetera. And what came out of that was the action plan.

Some of you may be familiar with the decision at the IAEA about within a year to develop an action plan to address some of the shortcomings that were seen as a result, lessons learned from the Fukushima accident, and here the Canadian effort was to push the regulatory levels as high as possible, to the point that we were not really -- almost not welcome intervenors because we would take the floor and would support from the Canadian regulatory expertise and experience in the industry and the Canadian Ministries of Health and NRCan that we were able to take I think the bar and said it higher and ever higher.

So my assessment is that the Canadian experience and model has a lot to commend itself. It is seen as being very vigorous, transparent. And this question of the peer reviews, which the Commission and the staff have been very vigorous in upholding internationally, is a way of trying to encourage what we are doing here in Canada with great transparency to be able to replicate that model internationally and have more countries be posting publicly their commitments to enhance their safety and security at a high level.

I'm sorry if that's a bit of a long -- but you are asking me to encapsulate a number of observations

into a short intervention.

But I would just conclude my answer on this point with something I have been reflecting on.

I think that in Canada we don't really see as clearly what a strategic asset we have in the technological expertise, ranging from the Chalk River to the industry more broadly to the regulatory side, encompassing -- we may sit here and examine the specific cases of a licence as we are today, of an extension of a licence, but we are able to use that internationally to raise standards and to get heard.

My last point is the international staff of the IAEA told me on a number of occasions that they always took the interventions of Canada and they used that as the basis of the reports they did. Why? Because we always put the evidence clearly, logically and carefully in our interventions and they took that as the standard.

THE PRESIDENT: Thank you. Thank you very much.

Anybody else?

So thank you for the intervention. We are going to take a 15-minute break. We will come here at five past 11:00. Thank you.

--- Upon recessing at 10:51 a.m. /

Suspension à 10 h 51

--- Upon resuming at 11:06 a.m. /

Reprise à 11 h 06

MR. LEBLANC: Please take your seats.

I am just going to verify the next intervener is Mr. Borden Rhodes. I just want to see, sir, if you are on the line. We will proceed with -- or in the room. We have been in communication with Mr. Rhodes, so I know he is on his way or trying to connect with us, but meanwhile, Mr. President, I suggest we go with the next intervention.

***CMD 15-H8.16/15-H8.16A**

Oral presentation by

Society of Energy Professionals

THE PRESIDENT: Okay.

The next submission is an oral presentation by the Society of Energy Professionals, as outlined in CMD 15-H8.16 and 15-H8.16A.

I understand Mr. Scott Travers will make the presentation. Over to you, sir.

MR. TRAVERS: Thank you very much.

I would like to thank the Commission for allowing us the opportunity to speak today. My name is Scott Travers, President of the Society of Energy Professionals.

With me today is Joe Fierro, the Local Vice President for the OPG Bargaining Unit; Paul Choiniere, who is a Unit Director in charge of our Darlington Refurbishment area; and Dave Romanowicz, who is a Unit Director with us who specializes primarily in health and safety.

The Society is here today in support of CNSC staff's recommendation that the Commission issue a licence for the Darlington NGS for a period of 10 years. We believe a 10-year licence will allow the refurbishment of the Darlington units to be carried out in the most focused and efficient manner.

We further believe that OPG is qualified to refurbish and operate the Darlington reactors. OPG has implemented adequate provisions for the health and safety of persons, the protection of the environment, the maintenance of national security and all measures required to implement international obligations to which Canada has agreed.

So I will start with some background on the Society.

The Society of Energy Professionals represents almost 8,000 employees working for 13 employers in the electricity sector in Ontario. We represent members at OPG, including the Pickering and Darlington Nuclear Generating Stations, Bruce Power, Hydro One, Nuclear Waste Management Organization, AMEC-Nuclear Safety Solutions, the Independent Electricity System Operator, the Ontario Energy Board and several other employees.

About 2,000 of our members are employed at the Nuclear Division of Ontario Power Generation and that represents about 30 percent of OPG's regular staff.

Our members work in a variety of broad disciplines as professional engineers, economists, auditors, accountants as well as first-line supervisors and first-line managers. Our members also work in specialized areas such as industrial hygienists, ergonomists, health physicists, training specialists, safety specialists, emergency response managers, waste management specialists, environmental scientists and environmental engineers.

Our members are knowledge-based workers. Approximately 90 percent of our members hold postsecondary degrees and diplomas and about 70 percent of them hold Bachelors, Masters or PhD degrees.

The Society stands behind its members' professionalism, integrity and commitment to excellence in

all areas but in particular those areas involving public and workplace safety, public health and environmental sustainability.

The Society represents an independent voice on all issues and particularly with respect to issues of occupational health and safety, public safety, radiation protection and environmental stewardship. The Society is here today as an independent voice and really can act as an additional safeguard in the process.

The Society and its members are uniquely motivated and positioned to be an additional safeguard of the Darlington Nuclear Generating Station. Our members are continuously trained to be able to work inside of and in close proximity to these complex systems. They would be among the first in harm's way should the highest standards of safe operation and occupational health and safety not be adhered to.

Furthermore, Society members and their families live in the Clarington and Durham communities. They and their families drink the same water, attend the same schools and participate in the community along with other residents. Our members have a strong motivation in ensuring the safe operation of the Darlington Nuclear Generating Station not only because of their expertise and professionalism but also because they and their families

live in the surrounding communities and have strong ties to the area.

The Society is thoroughly involved in OPG's safety culture through several tripartite committees and I would like to speak a little bit about that now.

The Society has a strong role in the health and safety of OPG nuclear. This starts with the Joint Health and Safety Committee, which is comprised of representatives from management, the Society and the Power Workers' Union.

This committee is very active at OPG and provides a successful forum for stimulating awareness of health and safety issues at the workplace. It provides oversight by challenging safety standards at the workplace and recommending improvements where needed and provides a forum for cooperatively resolving health and safety issues and, where necessary, participating in accident investigations. The objective of the Joint Health and Safety Committee is to have healthy people working safely in an accident-free environment.

At OPG, safety is taken further. In addition to the JHSC, or Joint Health and Safety Committee, there is also a tripartite committee, the Joint Health and Safety Working Committee, JWC, with the same structure as the local Joint Health and Safety Committees.

The JWC reviews safety at a higher level and performs analysis to identify occupational health and safety issues and trends. It evaluates evidence and solutions and recommends actions to the Director of Corporate Safety and to the Tripartite Advisory Committee, or the TAC. The TAC is comprised of the three tripartite Presidents, including myself, the Society Local Vice President and the Power Workers' Vice President.

The JWC has two further subcommittees, the Corporate Safety Rule Advisory Group and the Corporate Code Advisory Group, where members regularly discuss health and safety field issues, including rule changes and recommended strategies.

The JWC meets on a monthly basis and it is important to note that consensus of the parties is mandatory for the approval of joint policies.

In addition, we have a further area with respect to radiation safety. There is also a tripartite oversight committee, the Joint Committee on Radiation Protection, or the JCRP. This committee has a similar role and structure to the Joint Working Committee which I discussed previously.

As a result and flowing through all this, both conventional health and safety and nuclear safety at OPG are taken seriously throughout the organization,

starting with our members, the front-line workers, section managers and senior management at both the sites and at the corporate level.

OPG's safety record speaks for itself, showing time and time again that Darlington has a strong and healthy nuclear safety culture. Our members take nuclear safety as the highest priority over production pressure and always utilize conservative decision-making.

In addition, local leadership of the Society meets regularly with Brian Duncan, the Darlington Site VP, and Glenn Jager, the CNO and President of OPG Nuclear, and has the opportunity to raise any issues or concerns it may have at those meetings.

Finally, the Society regularly participates in CNSC hearings such as this one and others which afford us yet another opportunity to make recommendations for systemic improvements to safe operation, health and safety, and environmental policies and practices.

In the event that the Society believed there was a safety issue that we were unable to satisfactorily resolve through one of the many available internal processes and structures, the Society would not hesitate to seek immediate intervention of the Commission to use its powers under the *Nuclear Safety and Control Act*

to take whatever measures were necessary to remedy the concern.

I would like to take one moment to talk about the business transformation process that has been conducted at OPG. We have spoken at other processes, so I think it is important to mention it here.

Since business transformation began in 2011, the Society has been working with OPG to resolve the associated labour relations issues. While those efforts have not been completely successful to date, we feel it is important to point out that none of the labour relations changes OPG has implemented have, in our view, compromised or detrimentally affected employee or public safety and we believe OPG continues to have our full confidence on these matters.

We believe the Society represented positions recently vacated should be backfilled as ongoing regular positions so that there is less reliance on contract and temporary staff. We believe the regular workers are more committed to the safe, reliable operation of the facility and are more immersed in the safety culture at OPG. However, as I have stated, we do not believe that the business transformation processes have to date had any negative impact on the safe operations of OPG.

So, in conclusion, the Society is fully

committed to the safe operation of Darlington NGS, to the health and safety of our workers and to the members of the public and to the protection of the environment, and the Society fully supports the CNSC staff recommendation to renew the Darlington NGS operating licence for a period of 10 years.

Thank you for your time.

THE PRESIDENT: Thank you.

Questions? Dr. McDill...?

MEMBER MCDILL: Thank you.

I'm curious as to why you have supported the staff's recommendation of a 10-year licence as opposed to OPG's request for 13?

MR. TRAVERS: Scott Travers for the record.

It is the Society's belief that 10 years is sufficient to get through the bulk of the refurbishment and we believe that having periodic hearings such as this is an important part of the process, so we did feel 10 years was sufficient.

MEMBER MCDILL: Thank you.

THE PRESIDENT: Ms Velshi...?

MEMBER VELSHI: On your committee structure, is there a separate Joint Health and Safety Committee for the refurbishment project or is it part of

the Darlington Joint Health and Safety?

MR. ROMANOWICZ: Dave Romanowicz for the record.

At the present time we are having discussions at the Joint Working Committee on how best to manage that, whether it be the present Darlington Joint Health and Safety Committee expanded in some way to capture all this activity, whether it be a separate one, if it is a separate one will it be just for refurbishment or will it be a multisite?

So we are still in discussions about trying to iron out exactly how we want to manage, also with the PW, because it's a tripartite process, so we can come to some agreement on how going forward we want to best manage it in all people's interest.

MEMBER VELSHI: And what about participation from the construction trades for instance on the committee?

MR. ROMANOWICZ: That was one of the proposals that have been tabled by management to include those people that are involved with the refurbishment project and to get their voice at the table. So again, this would be more of an expanded tripartite, this would be multipartite, and how that would actually work and function so that everybody's voice would be taken into consideration

and everybody would have an equal opportunity to be able to participate in some way. So again, we are still exploring all the various nuances of trying to do that and manage it in the best way.

MEMBER VELSHI: Thank you.

And when it comes to -- I think one of your committees looks at goals and targets. Have you looked at radiation dose targets for example for the refurbishment project and reviewed those or is that something that is going to be happening later on?

MR. ROMANOWICZ: Dave Romanowicz for the record.

There is another committee on radiation protection and we do question the targets for refurbishment. In addition, we question all the targets across the board, whether it be an operational facility or whether it be refurbishment, and we do make challenges at these meetings and they have come with proposals in terms of what they want to look at and table it so that all the three groups can provide feedback and make further questions if something is awry.

MEMBER VELSHI: So has that happened already or is this work in progress?

MR. CHOINIERE: Paul Choiniere for the record.

Yes, that committee is ongoing. It has been alive and well for probably 6-7 months now. We have an ALARA committee in nuclear refurbishment. All the major players from execution from the unions are involved in that committee and the targets have been set.

MEMBER VELSHI: Thank you.

THE PRESIDENT: So in any one of those committees, did you ever deal with emergency management? I mean I assume many of you are residents of the neighbourhood here, you would be interested in emergency management. You heard some of the interventions. Is that not a subject that you would be interested in?

MR. TRAVERS: I know we spoke of that at the Joint Health and Safety Committee at Pickering, on emergency management. I am not a member of the Joint Health and Safety Committee per se at the Darlington facility but it has come up, as I say, at a Joint Health and Safety Committee in the past in terms of the plans and what is going forward, to provide oversight and to ask specific questions.

But the focus of primarily the Joint Health and Safety Committee is on conventional radiological matters within the station as opposed to the public at large and we don't tend to -- at least that committee doesn't tend to venture into that particular area, and

neither does the Joint Committee on Radiation Protection tend to venture into that particular area. It is something more of a public safety and public type, and neither of the committees that I am aware of has delved into that area to a large degree.

THE PRESIDENT: But you did use the words "as an additional safeguard." I thought that would fall into the definition of what that means in level V of defence in depth, right, beyond defence? And being residents, and some of your membership, you might want to consider thinking about that.

MR. ROMANOWICZ: Dave Romanowicz for the record.

I will pass that on to the various committees that I am involved with to explore more in depth to look at that specific issue.

THE PRESIDENT: Dr. Barriault...?

MEMBRE BARRIAULT : Merci, Monsieur le Président.

On your slide 9, the last bullet:

"The Society strongly believes that regular workers are more committed to the safe, reliable operation of the facility than contract/temporary workers..."

Do you want to comment on that because it gives the impression that you have two classes of workers here?

MR. FIERRO: Joe Fierro for the record.

There actually are two classes of workers. There are regular employees who are there every day for 30 years and there are people who are there for a piece of work and then leave. So it would be impossible to say they would be identical because those people who come for a piece of work and leave, they get trained up, they learn the way OPG operates and then they leave. They wouldn't have the intrinsic knowledge and skills that workers who are there for 30 years would have. It's a different -- it's a different paradigm.

So we believe that workers who are there day in and day out know more about the plans, the operations, the interaction between work groups than someone who isn't there on a regular basis.

MEMBER BARRIAULT: So does that affect their quality of work? Is that what you are insinuating here?

MR. FIERRO: Both would probably do good quality work. We just believe that the inherent additional benefits of a regular employee doing work would be greater than someone who is there of a non-ongoing nature because

they would be able to -- the regular employee would be able to provide additional insight and perspective when things are being looked at. They would have greater information about who to interact with to address an issue.

They would just have additional benefit to a contract employee who would do the work but require greater interaction with other regular employees there to fully understand the role and the interaction.

MEMBER BARRIAULT: Thank you.

Is it fair to ask OPG what percentage of contract employees you will have during the refurbishment?

MR. REINER: Dietmar Reiner, for the record.

The actual physical execution of work in the field during refurbishment falls into the jurisdiction of trade unions, the building trade unions. And so that's essentially for refurbishment, a contract workforce. The bulk of that, of refurbishment work falls into that space.

In regards to the work that lands within the jurisdiction of the society it's probably -- if you look across it's probably a 50/50 split and it's that way in large part because there are professional folks with our contractors that have to manage their resources and their work and that would -- that would align with the type of work that the Society of Energy Professionals manages.

In terms of our organization for project managing, probably more regular staff than contract staff; I would say a 60/40 or 70/30 type of split is probably what we are looking at.

I would just like to echo also that you know the commitment to safety and quality, we don't compromise on that. There aren't two classes or two standards. It is one standard.

There are challenges, however, as Mr. Fierro pointed out when you have -- when you have workers coming in that aren't accustomed with the standards that we have in place. So there are training requirements, additional training requirements and oversight that we provide to ensure that that same standard and same commitment is maintained by everyone.

MEMBER BARRIAULT: So there's a mechanism in place to assure yourself that they do provide the same level of -- the same standards of work?

MR. REINER: Yeah, absolutely. It's part of our oversight structure and part of what we ensure we manage across the entire project for all work done by everyone on the project.

MEMBER BARRIAULT: Thank you. Thank you, Mr. Chairman.

THE PRESIDENT: Thank you. Any final

thoughts?

Okay. Thank you for your submission.

***CMD 15-H8.24**

Oral presentation by Allan and Barbel Canning

THE PRESIDENT: The next submission is an oral presentation by Allan and Barbel Canning, as outlined in CMD 15-H8.24. And I understand that we'll hear from the intervenors through a teleconference.

Can you hear us?

MS CANNING: Yes, we can.

MR. LEBLANC: Okay. We can't hear you well. Please --

THE PRESIDENT: Please turn off your webcast.

Can you hear us now?

MS CANNING: Yes, I can hear you.

THE PRESIDENT: Well, go ahead.

MS CANNING: Okay, thanks.

For the record, my name is Barbel Canning and my husband, Allan and I, live in Collingwood, Ontario. Thank you for allowing us this time to state our concern. Our children, grandchildren and, perhaps soon, great-grandchildren live in Oshawa area, close to the

Darlington NGS.

Recently, my husband and I learned about the application by Ontario Power Generation Inc. (OPG) to renew, for a period of 13 years, its power reactor operating licence for the Darlington Nuclear Generating Station (NGS). OPG has requested this licence period to cover life extension activities, including refurbishment or rebuilding of the four Darlington NGS reactors.

My husband and I would like to intervene in this 13-year extension application by the OPG. Basically, we are actually against the refurbishing of the four nuclear reactors at Darlington NGS and for many reasons.

The province is lending OPG \$10 billion for the refurbishment of the four CANDU reactors. This means Ontario taxpayers have to repay \$10 billion through increased electricity bills for more than one generation.

My husband and I would certainly feel more at ease if our loved ones were living in the vicinity of a solar power plant even if it cost us \$10 billion. And eliminating nuclear power can be done. Germany will decommission its last nuclear reactor in 2022.

Rebuilding of the four reactors will create additional nuclear waste, most of which will be stored at Darlington and then moved. This dangerous waste

has to be transported via rail and trucks through Ontario's urban areas to nuclear waste dumps. The nuclear industry continuously spouts their message that it is a totally clean power, but what other waste lasts for 100,000 to one million years?

Now, regarding the unprecedented request for a 13-year licence by OPG, a 13-year licence would prevent any public input whatsoever during the refurbishment. Ontario citizens will pay \$10 billion out of their own pockets who live through circumstances of unreasonable risk during the rebuild and are not entitled to any information, input or suggestions.

The Fukushima nuclear accident has been a catalyst which produced changes internationally in the way nuclear power plants and emergency measures are handled. For instance, after Fukushima Germany proceeded to decommission all its nuclear power plants, Switzerland plans to decommission its last reactor by 2034. Quebec decommissioned its Gentilly plant. More jurisdictions including the Swiss Federal Nuclear Safety Inspectorate updated their emergency measures to reflect the lessons learned from Fukushima. Even Ontario's own Bruce Power Company upgraded their emergency measures after that disastrous Fukushima accident. The website brucepower.com is very educational.

OPG has leased out the Bruce Nuclear Power generating plant to a private company, Bruce Power. I was impressed by the ongoing communication with the surrounding communities regarding each nuclear reactor rebuild through each licensing period of five years.

The emergency measures mentioned in the website are as follows: As of August the 6, 2015 Bruce Power is preparing to mail out a community safety guide to residences, schools and businesses. Information packages have been mailed out in a 10 kilometre radius of the Bruce Nuclear Power plant.

Jurisdictions like Switzerland and Bruce Power obviously care enough about their citizens and their community to have emergency measures in place right this moment and four years after Fukushima they are not conducting endless studies and plans while human beings living in the vicinity of Darlington NGS are being condemned to live in a limbo of unreasonable risk. It really makes me angry.

I read up on the emergency measures in place at the Darlington NGS just to reassure myself that OPG is protecting our loved ones. What I found has caused me to be appalled and very anxious. In contrast to Bruce Power or to Switzerland, I see no evidence that the OPG or the Municipality of Durham have updated their emergency

measures which involve residents, not just the plant and its employees or if, I believe, sirens will sound twice a year they can be heard within the 10 kilometre zone unless of course you are hearing impaired or you're vacuuming.

As opposed to the jurisdictions listed above, the Durham emergency measures ignore the possibility of a Level 7 nuclear accident ever happening and will alert the people living in the primary zone with sirens, automatic telephone calls and TV announcements during any nuclear accident. This is so irresponsible and out of date. Many people do not have landlines anymore. Some people don't have TVs. Or there will be message alerts on the internet. Many people can't afford either computers or the internet.

I understand that CNSC -- and I commend it for recently initiating the mailing out of KI tablets within the 10 kilometre radius of Darlington NGS, as opposed to actually 50 kilometres in Switzerland. However, no community safety guides have been sent to residential schools or businesses in the vicinity of Darlington NGS.

The OPG states that it has learned much from the Pickering reactor refurbishment. Therefore, OPG will be learning from each reactor rebuild and CNSC and the public need updates on the progress and the safety of the rebuild of each reactor, all facilitated by a shorter

licence period.

OPG and its suppliers keep reiterating their assumption that the Darlington NGS is being run safely and that the rebuild of these four largest CANDU reactors will be done in a safe manner.

And to this end, OPG has built a training centre with a mock reactor for training the 2,000 new workers hired from 10 different companies. This is all commendable but 2,000 additional workers increase the chance of human error by 2,000 on top of the OPG permanent workers. As far as OPG's staff is concerned an additional 2,000 workers from outside companies will be excellent too, but it is unrealistic to assume that 4,000 to 5,000 human beings working on the rebuilding of the four nuclear reactors will never make an error. Such a human being has not been born yet.

It is very irresponsible and actually cynical for OPG to state that because Darlington NGS is not built on a fault line and because we have no tsunamis in Lake Ontario that the risk of a nuclear accident is very low.

The website, nuclearsafety.gc.ca, states that there are external events that can happen and one of them being aircraft crashes and internal events, and definitely being human error which can affect the safety of

reactors. Why did the OPG ask for the special legislation -- I'm sorry -- legislation which protects it from fully compensating victims in the event of a nuclear accident? That legislation, the *Nuclear Liability and Compensation Act*, seals the ontariopowergeneration.inc. It sure sounds like accident insurance to me. Therefore, even if the OPG is insured in case of any type of nuclear accident and the OPG is therefore protected, my family is not and will suffer health and monetary damage, god forbid, in the case of a nuclear accident, thereby suffering unreasonable risk.

Recently, I read about the upcoming sale of 60 percent of Ontario hydro which includes OPG. My own thoughts are that a 13-year OPG operating licence would make that sale more attractive to an investor. Again, those are just my thoughts.

A representative of Japan's nuclear regulation authority, Mr. Fuketa, visited Switzerland's ENSI, because Switzerland's periodic safety review standards have an excellent reputation. The present-day Japanese regulatory authority was created in 2012 after its predecessor organization was sharply criticized following the reactor accident at Fukushima. It was accused of not being sufficiently independent.

Obviously, nuclear safety including the

safety of the population is an ongoing educational issue. I find Mr. Binder's remarks at the recent WANO Biannual General Meeting regarding nuclear safety both at the plant level and concerning the general public very encouraging and reassuring.

As concerned citizens and family members worried about the safety and good health of their loved ones living in the area of the Darlington NGS, we ask that the Canadian Nuclear Safety Commission consider the request for a 13-year extension of OPG's power reactor operating licence as both unnecessary and undemocratic and grant a much shorter licensing period with a caveat that the above points regarding the absolute necessity of protecting Canadians must be addressed now.

Thank you.

THE PRESIDENT: Thank you.

Any questions for the intervenor?

Okay. Thank you for this intervention.

MS CANNING: You're welcome. Bye-bye.

THE PRESIDENT: Bye-bye.

*CMD 15-H8.92

Oral presentation by Darlene Buckingham

THE PRESIDENT: We'll move to the next

submission which is an oral presentation by Ms Buckingham as outlined in CMD 15-H8.92 and Ms Buckingham is also coming here through teleconference.

Ms Buckingham, can you hear us?

MS BUCKINGHAM: Yes, I can. Can you hear me? Hello?

THE PRESIDENT: Yes, we can. Go ahead.

MS BUCKINGHAM: Okay.

Commissioners, intervenors, for the record, Darlington Nuclear Station was begun in 1981, finished in 1993 and is approaching its end of life in 2015. Let it die in peace.

It is irresponsible to now ask for a 13-year licence when the licences in the past have been for five years. Why 13 years now?

Is it to buy time to solve the energy crisis that has been created in Ontario by promoting an energy that never should have been started without a way to bury nuclear waste?

The Province of Ontario that is already facing the burden of rising energy costs, is now going to have to foot the billion dollar, plus, plus, plus bill of burying nuclear waste that is dangerous for hundreds of thousands of years without producing anything productive, without benefit whatsoever to the taxpayers that bought

into this energy because the industry was not upfront about the full lifecycle, cradle to grave of the nuclear reactor.

The OPG keeps saying they have a plan but this planned DGR on the shores of Lake Huron is going to cost over a billion dollars and is nowhere near being started, and this is only for low- and intermediate nuclear waste. High-level waste is going to also cost over a billion dollars to deal with and a host community has not been found, never mind a shovel in the ground.

This plan is in the ethers, is only theoretical and who knows how many more dozens of years before the project is started? Imagine how much the project is going to cost us say 50 years from now and how much more nuclear waste will there be?

The WIPP, Waste Isolation Pilot Project in Carlsbad, New Mexico had an accident after 15 years in operations and this facility is supposed to be safe for 10,000 years and it didn't even make it to 15 years. This is what the DGR at the Bruce was based on and their answer is this after the accident, "Our DGR is not like WIPP". This is not a reassuring statement as the turnaround was made as soon as there was trouble. Has the OPG solved the safety issues?

My experience has been that the nuclear industry is flying by the seat of their pants when it comes

to dealing with nuclear waste. There is no viable plan or DGR that can be given as an example of a success story. It is misinforming the public to keep saying there is a viable plan.

Let's not beat a dead horse. Start to look at the very real fact that nuclear energy is not working and stop pretending that nuclear energy is an answer to the energy needs of Ontario and get on with spending the billions of dollars on researching and implementing renewable energy, helping Ontarians to retrofit their homes and use small-scale renewable energy to keep themselves warm and cook their foods, plus keep the infrastructures that are essential for public health and business without bankrupting ourselves having to pay for shielding ourselves from radioactive materials.

It is sheer environmental and monetary madness to contemplate keeping the Darlington reactors going for another 13 years and even contemplate building new reactors knowing the caveats that go with nuclear energy, having witnessed the so-called one in a million accident scenarios in 30 years, not once but twice, Chernobyl and Fukushima, that was recently deluged by the forces of nature and is still actively releasing radioactive water into our oceans, ignoring the long-term consequences to these accidents.

It is counterintuitive to say that nuclear energy is safe, clean and green when we see the devastation of Fukushima and learn how low doses of radionuclides slowly damage DNA. Remember the people of Fukushima cannot go home again. They have to worry if their children are going to be the ones to get thyroid cancer or leukemia or other radiation-related illness.

Removal of your thyroid and treatments were stated this morning to be easy. Have you talked to anyone that has thyroid cancer or who has been treated for thyroid cancer? I think you would get a different story; surgery and on medication for life. Thyroid medication pose a risk to unborn children. The CNSC believe that if a person is not interrupted on the spot there is no problem. Easy, I don't think so.

Imagine how that feels and continue to say that nuclear energy is safe. We can do better than that. People do not lose their homes and their livelihoods if, for example, a windmill goes down or solar panels need to be repaired. It is an inconvenience but not a threat to people's long term health and to their homes.

The game really is up; time to fold the cards and move on. Let the old reactors go with dignity and not put people in harm's way with aging equipment and high maintenance costs. We have alternatives. Why drag

this on and roll the dice hoping that the unthinkable will not happen here?

It was gratifying to see that the Nobel Prize for Literature was awarded to a Belarusian woman, Svetlana Alexievich, who wrote about the emotional human impact of this nuclear accident to her people:

"In *Voices From Chernobyl*, Alexievich interviews hundreds of those affected by the nuclear disaster."

"She's conducted thousands and thousands of interviews with children, with women and with men, and in this way she's offering us a history of human beings about whom we didn't know that much ... and at the same time she's offering us a history of emotions, a history of the soul."

There is no workable emergency plan if an accident were to happen at Darlington, never mind that it is not believable that the exclusion zone can be evacuated in five hours, but what about the day after and the many years after the accident? Chernobyl is still an active disaster zone as is Fukushima. People cannot return and rebuild.

It is also disingenuous to say -- excuse

me -- that the tsunami caused the nuclear accident in Fukushima and claims a tsunami of this magnitude was unforeseen. Nuclear energy, period, is the cause of the accident. If there was a tsunami and no nuclear reactors there would have been loss of life and a big clean up but not the continuing nuclear accident we have today and will have many, many years into the future. Nuclear energy is dangerous, not safe. There is no way around this.

Toronto is 60K from Darlington. If there were a Fukushima-scale accident at Darlington, how is this going to affect the people of Toronto, a city of three million? What is in place to prevent a panic, for example? How are potassium iodine pills going to be distributed to people in Toronto in two hours? I know Toronto is 10K outside the 50K exclusion zone recommended for potassium iodine pills but how many people in Toronto will want to take the precaution and do we know that in fact that they are safe from radioactive iodine fallout?

There are too many variables that have not been considered and have been raised by intervenors; food security, water security for example.

I also note, while watching the webcasts, all the poppies that are worn in remembrance for the soldiers that gave their lives, but let us also remember those in Hiroshima and Nagasaki who died by nuclear bombs

and those killed by depleted uranium weapons directly linked to mining uranium and splitting the atom. The peaceful atom is a myth.

Look at the precautions and preparations that have to be taken to uranium reactors. It's too dangerous and we have other ways far less complicated with less maintenance, far less costly and are truly green to continue on this course of powering our world with nuclear energy.

I'll end with a story about a spider. A spider spins a web that is of symmetrical beauty, perfectly balanced. If a person destroys a spider's web by tearing it down, the spider will quickly rebuild the web. If a person again destroys the web, the spider will again rebuild the web with the same beauty and symmetry. If a person continues to destroy the web over and over and over again, the spider will eventually no longer be able to build a symmetrical whole web. There will be tears. The web becomes weaker and weaker until the web is no longer recognizable.

The story of the spider and its web is a metaphor to how radionuclides damage DNA over time. We cannot afford to continue to release radionuclides to the environment not found in nature that damages the DNA of life and the sacred web of life.

In closing, I strongly support and ask the Commissioners that Darlington not be given a licence for an unprecedented 13 years, five years maximum, preferably two years, and the conversation begin in earnest with OPG, CNSC, politicians and the public how Ontario is going to switch from a nuclear province to a renewable energy province and decommission all nuclear reactors.

That will be better for the environment, better for our health and, ultimately, easier on the pocketbook.

Remember, every day nuclear reactors are running is the possibility for a very bad day that will have repercussions for generations to come. We have the responsibility to do better.

Thank you for this opportunity to speak to the Commission.

THE PRESIDENT: Thank you.

Any comment?

Okay. Thank you very much for your presentation.

MS BUCKINGHAM: Thank you.

THE PRESIDENT: I'd like to move on to the next submission, which is an oral presentation by BWXT Canada Ltd. as outlined in CMD 15-H8.152 and 8.152A.

I understand that Mr. MacQuarrie will make

the presentation. Over to you.

***CMD 15-H8.152/15-H8.152A**

Oral presentation by BWXT Canada Ltd.

MR. MacQUARRIE: Thank you, and good morning, Dr. Binder and Members of the Commission. I am John MacQuarrie. I'm President of BWXT Canada.

Today, I'd like to briefly offer you a supplier's perspective on how Ontario Power Generation maintains Darlington in a safe condition, which is why we support the relicensing of Darlington for a 13-year period.

Briefly about BWXT Canada, we are North America's largest manufacturer of heavy nuclear components, and we provide services. There's about 400 employees. We're located in Cambridge, and we're formerly Babcock and Wilcox Canada.

My remarks will focus on two topics. First is how we see OPG maintaining the plant condition in a safe condition, and second, how they approach inspection and maintenance and how they try to achieve operational excellence in the conduct of their operations.

So first, in terms of optimizing plant condition, from our perspective, we see that OPG performs very regular inspections of the components that they're

operating at the plant.

They have well understood and characterized the components, and particularly the safety critical components.

We also note that times they go beyond what's expected in Codes and standards to make sure that they have fully characterized and understood those -- the condition of those components.

And we see that they're very focused on qualifying inspection techniques to make sure that they are, in fact, getting accurate information when they're conducting these assessments.

We also see them undertaking rigorous preventative maintenance programs. These are well-documented life cycle management programs for the major components that consider all of the possible degradation mechanisms and guide them in their inspections and maintenance.

They have detailed procedures that they use and follow to make sure that they are, in fact, carrying out all of the inspection and maintenance that they need to, and they have a very proactive approach to repairs to improve the material condition of their components.

And we see them continuously improving the

reliability of these systems.

We also see them striving to develop better inspection techniques so that they can characterize the components. They've made significant investments, for example, in their reactor inspection technology as well as in the steam generator inspection technology over the last 10 years.

And they're constantly challenging suppliers to improve their techniques so that we can further understand the condition of these components and ensure that they are safe.

OPG is always conducting research into plant aging and material condition. We see them making large investments in this type of research.

They're part of the CANDU owners' group which many of the suppliers are also part of, and together, we work on understanding material condition and how life extension can be supported by proving that materials can operate safely for a long period of time.

They do work closely with suppliers to make sure that they are -- that suppliers are engaged and that OPG understands all the knowledge the suppliers bring to the situation.

And they are exchanging information with others very regularly, so for example, in CANDU owners'

group, they work very closely with their colleagues who operate other nuclear facilities.

We also see that they take steps to proactively replace components as they approach the end of life, and when they do so, we see that they take an approach of continuous design improvement. So the next version of the component, they try to make sure that materials are better, that they're designed to last longer, et cetera.

They invest -- when they do so in replacing components, they invest in independent design review to confirm that the designs are good, so not just relying on themselves or the supplier, but often engage others. And that they have a rigorous approach to change of their plant, so essentially engineering change control.

And we feel regularly their careful oversight of how we are designing components. They're always monitoring what we're doing. They're participating in our design reviews, et cetera, so it's a very interactive type of situation.

Those are my comments on how they approach material condition.

In terms of their approach to achieving operational excellence, I have a couple of comments in that area.

We see they have a rigorous control over conduct of operations, whether it be themselves or suppliers or sub-contractors that are working in their facilities. Significant focus on procedure development, review, use and improvement.

They have pre and post-job briefings on procedures that are followed to make sure there's continuous learning and that those procedures continue to get better. And they have highly-engaged personnel like field engineering and safety -- or quality control personnel that are engaged in everything that's happening as operations are occurring.

There's extensive training of workers, whether it be their own workers or supplemental workers that are trained before they start work, oftentimes on mock-ups to simulate the work that they will be doing. And very significant focus on radiological safety training and error reduction training.

And I find that they have very engaged leadership, consistently are visible in the plant or visible with supplier organizations, regularly performing observation and coaching of OPG and contractor staff, and working with us to make sure that we are doing so.

And they have extensive training of their front line supervision. I think their program is amongst

the best that I've ever seen.

In terms of their continuous improvements program, they have many station condition records that they document and that they process through a rigorous system to continuously improve. Metrics are compiled, analyzed and communicated and actions are taken, and operating experiences are shared with not only other operators, but also the supplier community because we have access to that information.

We see that they have very vigilant supplier oversight, clear communication of what is expected through extensive contracts and other means. Supplier performance is measured, score-carded and reported back, and there are corrective actions when necessary to make sure that we're undertaking improvement to meet those expectations.

And they have a human error reduction program or human performance program, as you might be aware, that is extensive and developed on, I think, a world class standards, which includes things like dynamic learning activities and other error reduction techniques.

In terms of what OPG expects of us as suppliers, certainly they expect very highly-developed quality assurance programs, which they are regularly auditing.

They expect engaged supplier leadership, that we know what's going on just as they know what's going on.

There's extensive and increasing oversight of not just us, but our supply chain, and we are doing that and they are doing that.

Mock-up facilities to qualify processes and to simulate work in the plant before we actually execute that work. And certainly dynamic learning activities to train workers to make sure that they are trained and that we check out that that they have understood that training. And that we have well-developed safety, human performance and nuclear safety culture programs.

What we see, of course, is that the results of all this effort are proving to be very good performance, so very high capacity factors and consistently ranked well in the world fleet as well as the CANDU fleet, low injury rates, no exposure to the public for significant radiation and, you know, maintaining a very low emitting power source for Ontario.

So in summary, we support the relicensing of the Darlington facility for a period of 13 years so that Ontarians can be provided with clean, safe, reliable and affordable power and that we can support all of the many

people that work in the industry to do so.

Thank you very much for listening to my comments.

THE PRESIDENT: Thank you.

Questions?

Monsieur Tolgyesi?

MEMBER TOLGYESI: According to your presentation, you are present at the site and you do lots of maintenance work.

Is it done by employees who are full-time on the site or they are coming for, say, for one week and eventually they will come back? They are on call.

MR. MacQUARRIE: So I understand your question that you're asking about how we do our maintenance work.

And so in the case of ourselves, we have full-time employees. As I said, there's about 400 employees in Cambridge that are working exclusively on nuclear service type of work.

We also do engage supplemental workers, so building trade personnel, to work with us. And so what we do with those personnel is we'll train them to make sure that they understand the expectations.

As I mentioned in my presentation, we have a facility that has mock-ups, that has human

performance-type dynamic learning training, and so it's a combination of permanent BWXT employees and supplemental workers.

MEMBER TOLGYESI: I was thinking specifically Darlington because you are talking about maintenance, et cetera. So you are full-time on the site or you are coming as --

MR. MacQUARRIE: Sorry, yes. I understand your question.

So no, we don't have a full-time presence on the Darlington site. We don't have a full-time presence on any customer's site. But we're working in nuclear plants regularly.

It's -- that is our business, so we're deploying people regularly. So our people are in various plants throughout the year, every year.

MEMBER TOLGYESI: So to what extent this case your employees are aware of emergency evacuation procedures? Because you are coming once in a while, so to what extent you know what to do, how to do, when to do?

MEMBER MacQUARRIE: All employees who do work at a nuclear facility like Darlington are well trained in the expectations in terms of emergency situations, so there is computer-based training, there's classroom-type sessions that are conducted by Ontario Power Generation and

also by companies like ours to make sure that any worker that enters the facility understands what is expected in those emergency situations.

MEMBER TOLGYESI: OPG, when one employee is coming once and the next month is somebody else, how do you manage that they are aware of procedures and, specifically, emergency, if it's evacuation, et cetera?

MR. DUNCAN: Brian Duncan, for the record. I'll let Dietmar add a little bit of detail around the specific training we do.

It's rare, though, that you would see -- well, maybe elevator maintenance, but it's rare that you would see someone come in for one thing and someone different for the next. You know, we tend to package our work around outages.

Dietmar is packaging a lot of work around the refurbishment, so you'll see continuity of work.

And when we work with vendors with specific expertise, as with this intervenor, you know, they'll bring -- whether it's boiler inspection or boiler maintenance, they'll bring expertise that does this kind of work at a lot of facilities.

But what we must do for anyone we bring into the site, we have to do on-boarding or baseline training with those individuals so they understand what our

safety protocols are, what our emergency phone numbers are, what to do in the case of an alarm going off, who they interface with, what their limits of control are. All of that is done for people that we bring in onto site.

But I'll let Dietmar fill in some of the details.

MR. REINER: Dietmar Reiner, for the record.

We've established -- as part of getting ready for refurbishment and given the significant volume of prerequisite work that we're undertaking, we've established an on-boarding facility at the Darlington energy complex, so that is where we would do security checks, do the training that's required to ensure that the supplemental work forces we bring in are qualified to do the work, give them any site-specific training or work-specific training that they need to have in order to execute the activities they're assigned to execute.

So that's a big part of our process, and we run that on a continual basis.

THE PRESIDENT: Thank you.

Anybody else?

Thank you for your intervention.

MR. MacQUARRIE: Thank you.

THE PRESIDENT: I'd like to move on to the

next submission, which is an oral presentation by Ms Stevenson as outlined in CMD 15-H8.151.

Over to you.

***CMD 15-H8.151**

Oral presentation by Brenda Stevenson

MS STEVENSON: Good day, and thank you for the opportunity to voice my concerns.

I'm opposed to OPG's request for a lengthy --

MR. LEBLANC: Excuse me, Ms Stevenson. Sorry.

I just wanted to add that this is a change from the agenda, so people may have organized their material based on the agenda.

So Ms Stevenson and the Durham Nuclear Awareness, they switched time slots because DNA had other commitments this morning, so Ms Stevenson was originally scheduled to present later this afternoon with CMD H-8.151, and we will do the Durham Nuclear Awareness session at the spot that Ms Stevenson initially occupied.

So just to make sure that everybody gets a chance to get your written statement, Madame Stevenson. Thank you.

Just wait for 30 seconds, please.

THE PRESIDENT: Go ahead.

MS STEVENSON: I am opposed to OPG's request for a lengthy 13-year licence to rebuild Darlington's four reactors.

Previous refurbishments in Ontario and New Brunswick, for example, have resulted in billions of dollars in cost overruns, and years of delay.

November 1st of this year, Ontarians were treated to yet another electricity rate increase thanks to aging nuclear power reactors.

Removal and storage of radioactive pressure tubes risk environmental contamination, have the potential to impact the health of both surrounding communities and inside workers. Witness the worker contamination incident in 2009 at the Bruce plant.

The 13-year licence only serves to keep the public uninvolved, uninformed and adds to the atmosphere of mistrust.

I prefer to know exactly what is going on in the place that I live and where my children and grandchildren call home.

The recent implementation of the KI program to protect thyroids of those exposed during a nuclear catastrophic event is a step in the right direction

for emergency planning, but falls far short in its scope, 10 to 12-kilometre range. We know that these pills are only 100 percent effective if taken before an accident occurs. What is the likelihood of that?

I would like to see a broader distribution as high as 50 kilometres as was done in Switzerland post-Fukushima.

As far as evacuation goes, I am told that CNSC prefers we shelter in our homes even though dwellings of wood and metal are not radiation protective. It would appear that the Commission does not believe a secure nuclear accident is possible here.

On these matters, I put my trust in the recommendations of DNA, Greenpeace, CELA, Great Lakes Waterkeepers, to name a few, those tireless individuals who are the watchdogs who put the environment and human health first.

Since Chernobyl, I have attempted to keep abreast of activities surrounding nuclear plants in my own area of Durham and around the world. This is not something I do for fun; rather, I have real concerns for the health and well-being of our communities and, indeed, the future of our planet.

These concerns include ongoing low level radiation, which is not as low risk as it sounds, mounting

toxic waste sites and worldwide nuclear disasters, all of which have insidiously become part of our reality.

As well, the fact that Canada and the U.S. have built nuclear power generating stations on the shores of the largest freshwater system on earth, a system that provides drinking water for an 8.5 million population, the wisdom in that totally escapes me.

Given our current status in Ontario having an energy surplus, coupled with the availability of Quebec imported hydroelectric power, solar, wind, industrial co-generation facilities, the path seems clear.

As an aside, I was in Peterborough yesterday, and we came across a new project to increase hydroelectric power using the river to provide power for 1,600 homes. Good to see.

Why take on the risks and escalating costs of nuclear?

We, as citizens, need to do our part as well. We need to examine the disconnect between the luxury of slipping a switch to light our houses after the sun goes down, cooling our rooms when we feel a little sweaty and the source of that technology in the bigger picture.

Like it or not, we are all in this together. We have mostly all been touched by images of Syrian refugees migrating into Europe with their families.

The lesson here, if we ignore our responsibilities to each other, people lose their homes, their livelihood, societies crumble, children perish.

We cannot lead meaningful lives when we separate ourselves. Our responsibility is to look after each other, to not pollute the earth, to not poison its inhabitants, to not destroy wildlife and render the planet's water undrinkable.

I like to believe we have similar values, to live a productive, healthy life, have long relationships, to nurture the children and leave them a clean earth that they can, in turn, leave to their children. And so I urge you, going forward, tread carefully, do no harm, listen to the people, especially those with no monetary ties to the corporation, listen to the truth-seekers, the volunteers, the First Nations, the mothers.

And I'd like to finish with a powerful quote from the IAEA Director-General regarding Fukushima, which I'm sure you've heard before:

"A major factor that contributed to the accident was the widespread assumption in Japan that its nuclear power plants were so safe that an accident of this magnitude was simply

unthinkable. This assumption was accepted by nuclear power plant operators and was not challenged by regulators or by the government. As a result, Japan was not sufficiently prepared for a severe nuclear accident in March 2011."

We do not have to go down this path if the Commission does not grant OPG a 13-year licence for the life extension of four units of the Darlington nuclear plant and the Ontario government diverts the money, public's money, to cleaner, safer alternatives.

I remain hopeful that this can be our future. Thank you.

THE PRESIDENT: Thank you.

Comments?

Dr. McDill?

MEMBER McDILL: Thank you for your presentation.

I wonder if I could ask CNSC to address the comment that -- attributed to them, I guess, on the topic of evacuation the CNSC would have us stay sheltered in our homes.

DR. THOMPSON: Patsy Thompson, for the record.

I don't recall that we've made a clear -- that we've taken a clear position on sheltering rather than evacuation.

What we have stated is what has been learned from lessons learned in Chernobyl and Fukushima, is taking -- making decisions on implementation of protective actions need to be carefully weighed in terms of the health benefits from protecting people against radiation against the risks of taking certain protective action measures. And so essentially, the process that was explained by the Office of the Fire Marshal earlier this morning where knowledge of the plant situation, modeling of expected doses in relation to the weather conditions at the time, prevailing wind conditions would help in decision making.

There's been quite a bit of evidence that, in some cases, the health benefits are greater by having people shelter in place and then, when more information is available, to taking measures to evacuate in a more careful manner, I guess, and a less urgent manner. But it has been demonstrated that sheltering does bring benefits.

And if you wish, I could ask Mr. Alan Du Sautoy to speak about some of the constraints and the issues around sheltering, if that would help.

MEMBER MCDILL: Please.

MR. DU SAUTOY: I would say that, under

certain circumstances, we feel that sheltering is beneficial compared to evacuation, which creates more trauma and more psychosocial effects. And usually, sheltering is a short-term measure and it's rarely used on its own, so it would usually be used with things like direction to take potassium iodide or other -- limiting of intakes of certain food, if it's necessary.

It can reduce the external radiation hazard from gamma radiation and beta radiation, although it does vary based on the materials of construction and whether there are one or more floors and, of course, the energy and the types of isotopes of the emission themselves.

The CSA currently recommends a shielding factor of approximately 50 per cent for indoor occupancy. Having said that, in some situations a more detailed estimate is required.

I also note that Health Canada is, at the moment, conducting a study to measure the effectiveness of Canadian homes in terms of the shielding afforded by external exposure to radiation.

THE PRESIDENT: Thank you.

MEMBER McDILL: Can I go back to the intervenor? Yes.

Does this clarify what, or at least assist

in your understanding of what the position is?

MS STEVENSON: Yes, but I talked about metal and, you know, siding homes. These people wouldn't be protected if they were sheltered in those homes, so you'd need a brick home and you'd have to seal all the cracks. Really -- no, it doesn't clarify.

MEMBER MCDILL: Can I go back then to the CNSC just to clarify that a little bit, please.

MR. DU SAUTOY: I mentioned that it's -- sorry, Alan Du Sautoy, Director of Radiation and Health Sciences.

As I mentioned, it's sheltering against external radiation hazards from gamma radiation and beta radiation, it's not from radioactive materials that might come through gaps in doors or windows or things like that. So that's why sheltering is useful.

THE PRESIDENT: Okay. Any final thoughts?
Thank you very much.

MR. LEBLANC: So we have to be flexible.
Thank you very much, Madam Tilman.

The next presentation was to be by Ms Elaine Walters. She just informed us that she had taken ill and would like to be -- oh, sorry about this -- would like to be rescheduled. So we'll see what we can do, and if we cannot reschedule her, we'll treat her as a written

statement.

We also have Ms Stephanie Woodward who we've tried to reach since yesterday without success. So if she's not in the room, we're going to treat her submission as a written submission as well.

And Ms Tilman has graciously accepted to present earlier than when she was scheduled. Since she was already in the room, we've asked if she would do so.

For the Commission Members, she was to present around mid-afternoon, so it's in CMD 15-H8.22A.

THE PRESIDENT: Everybody fine on the Commission?

Okay. So I'll move to the submission which is an oral presentation by Ms Tilman as outlined in CMD 15-H8.22 and H8.22A.

Ms Tilman, the floor is yours.

***CMD 15-H8.22/H8.22A**

Oral Presentation by Ms Anna Tilman

MS TILMAN: Okay. Don't start the clock yet, okay.

Okay, thank you and good afternoon.

We have numerous concerns about the refurbishment of the units in Darlington in general and

specifically with OPG's plans as outlined in their submissions.

We consider the refurbishment of these four units in succession, without pause, each taking approximately three years is a massive, extremely complex and unique undertaking.

Every stage of the work would need to be done without any glitches, on time, all components must be in top working order and we question at the very outset whether this is even credible or possible.

You see in this slide on refurbishment timelines by OPG and, as other people have commented on, this is a lengthy licence period, 13 years, unprecedented. CNSC staff have recommended 10 years, but that is also an unprecedented length.

It doesn't allow for stakeholder input, public scrutiny and transparency that a project of this intensity requires, and that is not acceptable.

There are periodic Commission updates after each outage, but we're not sure what the nature of these updates are and how or if the public are involved.

OPG has acknowledged that there are potentials for delays, but based on past experience with refurbishment, that is all the more likely. But what back-up plans has OPG come up with? Has there been

sufficient -- has there been discussions on sufficient replacement power in case of delays? And why, we question, has OPG produced such a tight schedule when, to all intents and purposes, it is most likely unrealistic?

Turning to the scope of the refurbishment, I want to focus on the greatest cause of the problems in CANDUs which is, of course, fuel channels and steam generators and replacing fuel channels is essential to rebuilding the reactor core, replacing steam generators is essential to protecting the integrity of the radioactive/non-radioactive barrier.

And I've listed a number of issues here regarding steam generators, problems that they encounter as they get older, the fretting, corrosion, cracking, et cetera.

But OPG is not intending to replace the steam generators, but relying on routine maintenance and cleansing, water lancing basically to keep them operating, but there is no evidence that this will work.

If you keep operating with degraded steam generators there will be extended outages that are caused due to the increased needs for inspection and repair, and that is a concern that will be discussed later regarding workers and potential greater exposure to radiation.

What is the rationale for not replacing

the steam generators? Is it financial and technical, or -- and what happens when they're replaced later?

Pressure tubes have received a lot of attention and we know that one of the main problems is the embrittlement, delayed hydride cracking and a chance of rupturing.

However, the pressure tube safety is another issue. Right now they've been accorded 235-kilowatt effective full power hours beyond the original target. CNSC concurs that that's not what they call a cliff edge, although I'd hate to be on that cliff.

I'm not sure what data is there to support this contention and there are certain safety issues. The more inspections you do, you increase the likelihood of fracturing. Some of these pressure tubes have damage, for example, unit 2 without question, it's the oldest unit with the least number of effective full power hours, why?

Any delay in the refurbishment schedule, which is more than likely, could lead to exceeding 235-kilowatt effective full power hours in two of the units anyway.

Switching a couple -- an area. Just a reminder for the next slides, any level of exposure to ionizing radiation can cause harm.

Regulatory limits are allowable levels of

exposure, they're not health limits. OPG and Bruce Power have said administrative dose limits, called ADLs. For contract workers, they're 40 mSv per year, double what is set for nuclear energy workers.

Which turns to a very important issue of the worker health and safety. This will rely heavily, the refurbishment will rely heavily on contract workers with routine maintenance and so on, increasing with frequency as the components age. Some of the work may have to be done manually and because reactors, very importantly, will be shut down according to the plan for a very short time before refurbishment, the radiation field surrounding reactors will be much greater than was done at Bruce A which was shut down for approximately nine years before refurbishment began.

All of this results in potential for greater external/internal exposure to radiation.

As mentioned, the majority of the work, and I'm not sure what proportion after listening here, will be done by contract workers. They'll be doing these jobs repeatedly. This could result in increase in high total exposures to radiation.

Discussions were talked about the training that contract workers will receive. Well, will the hazards of the work and the potential for accidents be addressed?

Will the risks, the real risks of exposure to radiation be properly explained? And will these workers have the option to opt out of a task if they find it too dangerous?

Nuclear waste is the Achilles heel of the industry and refurbishment waste is intermediate level waste, significant amounts of it as well as low-level waste, amount of waste that is, again, created along with 30 more years of operation and decommissioning is a load of waste to add to an already insurmountable problem.

Again, changing tactics. We've heard a lot about the CNSC's consequences of hypothetical severe nuclear accident study and the findings briefly, and I'll look to the third bullet -- you can see the others -- childhood thyroid cancer was found to be the only radiation-induced cancer that was distinguishable from baseline levels.

There have been several comments on the validity of this study and briefly, although we said more in the written submission, this study was based on an unrealistic source term, rather, that predicts levels that are regulation release levels that are far below that for severe accidents. The consequences, and that's the whole issue of accidents, the consequences could be far more severe than this study would indicate, especially considering you have 10 reactors from close proximity to

large population areas.

These findings may give a false sense of security to the communities living in proximity to these reactors.

Rather than belabouring probability safety assessments, let's just say one thing, it's impossible to anticipate everything that could cause a serious nuclear accident, but it is also impossible to predict when an accident will happen.

So that turns to emergency preparedness. Because you can't predict it, so you have to consider, if an accident were to happen today, are these emergency measures in place? A number of these measures have listed that we're concerned about. Concerned about safe evacuation quickly. Sheltering. Is the sheltering appropriate? What is considered to be a safe shelter? Does it protect against external radiation?

Has the evacuation of the excessive number or extra number of workers been taken into account during the refurbishment?

What are the provisions? Are the adequate provisions and trained people to provide this safe food water and health care needed?

Are the zones that have been set aside now even adequate or appropriate? Do they take into account

dispersion from changes in wind direction and so on that will require further evacuation?

Will potassium iodide pills be made available beyond the 50-kilometre zone to cover the most?

And Chernobyl, important to note: higher than expect thyroid cancer rates were found more than 200 kilometres from the nuclear plant.

In our view at Darlington the current state of emergency preparedness is not adequate because the danger of a severe nuclear accident is not being taken seriously.

Quickly, there have been previous experiments with -- or previous refurbishment exercises. The Bruce A unit one has stood out because of the alpha contamination incident in 2009, which led to internal alpha radiation for over 550 of the contract workers. And I'll pass on to that.

Point Lepreau, there's been technical problems that developed, there was also alpha contamination, and refurb waste was much greater than anticipated.

Pickering, not a happy story. The lessons of refurbishment -- I'm almost finished -- a long history of cost overruns and delays. It adds to the intractable problem of radioactive waste and, ultimately, the public

pays the cost.

In conclusion, refurbishing Darlington to keep these units operating for another 30 years is not an option. It is a dangerous, costly undertaking. We don't know how successful these plants are able to continue after refurbishment. It's an impediment to a shift toward renewables.

In terms of recommendations, we urge the Commission to reject OPG's proposal for the 13-year licence. Instead we recommend two things, one here: that the Commission issue OPG an operating licence for, at most, four to five years.

Also, in listening to other interventions, there are outstanding issues that have come forward during this hearing -- emergency planning, other cases -- that the Commission has to hear more about before proceeding.

And we would urge that the Commission consider having within one or two years a hold point on the licence to allow opportunities to gather further information, and have public input for that.

Thank you very much.

THE PRESIDENT: Okay. Thank you.

Questions?

Monsieur Harvey.

MEMBER HARVEY: Merci.

I just have one question to OPG. I'll just say a few words.

I know we have discussed that earlier, not today, but on other days, about the steam generators. So just say a few words why the steam generators that are in place will do the job for the next 25 years.

MR. DUNCAN: Brian Duncan, for the record.

As part of the refurbishment, we had to do a component condition assessment, of course, to determine all of the elements of: what needed replacing, what needed refurbishing and what was still in good condition. The steam generators at Darlington are in very, very good condition. We know that because we inspect them. We know that because we've taken very good care of the chemistry of these units right from the get-go. We have a lot of confidence in the performance of these steam generators today and going forward.

You know our mission is to continue to monitor chemistry, to control it carefully and to keep them clean to ensure that we can get the full life out of them.

MEMBER HARVEY: Well, the Staff, you support the OPG position?

MR. HOWDEN: Barclay Howden speaking.

I'll ask Gerry Frappier to speak to it, because we've been looking at the Fitness for Service of

these components.

THE PRESIDENT: While we've got you, can somebody talk to me what is the worst case that can happen when a steam generator, I don't know, sprang a leak? So what'll happen? And is it a early detectable and the whole steam generator replaceable?

MR. FRAPPIER: Gerry Frappier here, and then I'll pass it on to Dr. John Jin in a second.

So steam generators are an important component, and they're certainly a component that we spend a lot of time watching. There is a specific life management program associated with steam generators.

The decision to replace them were not as a business decision, that's up to OPG; however, they cannot operate if we find that they're not fit for service. So they have to demonstrate that they're fit for service, both now and for the duration of the licensing period. And we have a periodic inspection program that'll ensure that as time goes on.

And so I'd ask Dr. John Jin to explain a bit more.

MR. JIN: My name is John Jin, for the record.

I am the Director of the Operational Engineering Assessment Division. My division is taking the

technical review of the pressure boundary component.

With respect to the question about whether we can use certain components, not just for the steam generator but any component in the nuclear plant, it is decided based on the rigorous or thorough technical assessment to see if it's fit for service, meeting all the general requirements.

As for the steam generator at Darlington, the technical specialist at CNSC conducted an in-depth technical review of the condition assessment conducted by OPG and confirmed that the condition of the steam generator is sound enough to maintain all the design requirements.

And for the future operating condition, we again reviewed the lifecycle management program, which is the steam generator-specific aging management program, and we found that the program is sufficient enough.

If you see the aging management program, their licences started with the all the potential, as well as the activity relation mechanism in the steam generator, and licences developed the mitigating or preventative measures to prevent any condition features beyond the design basis.

As for the steam generator, it is a very common component to all nuclear power plants, not just in Canada, but all across the world, and there has been

significant operating experience available. Also there are quite significant research findings to maintain the steam generator within Fitness of Service and how to inspect to ensure the original unacceptable degradation.

So for your question about the worst case, as a defence if there is major -- if everything goes wrong, we are expecting there is a leak to the steam generator tubes, there's an early detection system to detect the leak at a very early stage, enough to shut down to prevent any risk to outside of the containment.

So, in conclusion, we confirm that the licence has all the measures to maintain the steam generator in really -- in good condition.

MR. DUNCAN: Brian Duncan, for the record.

So, you know, an SG tube leak, if one were to develop, that is part of our safety analysis. That is one of the accident scenarios. We would take that unit promptly offline. We can detect that very quickly. We would take that unit to a cold depressurized state and we'd go in and we'd plug that tube, and then we'd inspect the ones, you know, to understand how that developed.

Part of our inspection campaign, you know I have a unit in a maintenance outage right now. Part of that campaign is to do thickness and wall measurements on all of those tubes. We ultrasonically inspect them. That

is part of showing and demonstrating to the regulator that they are fit for service.

THE PRESIDENT: Thank you.

Ms Velshi.

MEMBER VELSHI: A question for OPG on radiation dose limits on slide 7.

So earlier today we'd heard that there aren't two classes of workers for the refurb project, but can you talk about the administrative dose limits, and are they different for the contractor workers versus regular employees, please?

MR. REINER: Dietmar Reiner, for the record.

We are planning to execute refurbishment within the same administrative limits that are used currently in operations. In fact, the planning assumptions we're using is actually slightly lower than that. We're looking at no more than 18 millisieverts per employee.

That would apply, really, only to a couple of specific trades that would be most exposed during the work. If you were to look across all refurbishment work, it's significantly lower than that.

MEMBER VELSHI: Thank you.

So, intervenor, where did you get your information about the 40?

MS TILMAN: It's in OPG's licence handbook for Darlington, and in my written submission I probably have the reference for it. And I ran across this in Bruce at the past licence hearing, too, and my information comes directly from OPG sources.

--- Off microphone / Sans microphone

MR. REINER: Dietmar Reiner, for the record.

I think that administrative limit does exist. You will see that in writing. But, as I said, it is not what we are planning the work to. What we are planning the work to is an 18-millisievert limit.

MEMBER VELSHI: Thank you.

THE PRESIDENT: Question?

Dr. McDill.

MEMBER MCDILL: Thank you.

My question is on page 10, with respect to both low- and intermediate-level waste, and then the long-term solution.

I wonder if Staff has had a chance to determine what's the state of the long-term storage for fuel in Finland. I asked yesterday.

MR. HOWDEN: Yeah. Barclay Howden speaking.

Karine Glenn, we were going to deliver

that after lunch, but she can deliver it right now. I'll just wait for her to get to a microphone.

MS GLENN: Good morning. Karine Glenn.

For the record, I'm the Director of the Wastes and Decommissioning Division at the Canadian Nuclear Safety Commission.

In response to your question that was asked yesterday evening about the status of the DGR for the fuel in Finland, they've completed the Rock Characterization Facility, which is similar to what we often hear as an underground research facility, at the proposed site for the repository.

That was completed in 2013, where they've reached the actual disposal depth of approximately 450 metres. And in February 2015, the Finnish regulator issued a statement saying they had completed their review of the project, and now the project is waiting for the Finnish government's decision on whether or not to proceed with the actual DGR.

Similarly, in Sweden, the regulator is expected to issue its report and its recommendations on the proposed DGR in Sweden in 2015, and similar to Finland it will have to undergo regulatory -- sorry, excuse me, government approval as well for that project to proceed.

There are several other jurisdictions in

which the process of siting a DGR is currently ongoing, such as France, where an application is expected probably in 2016 in Switzerland as well as Canada.

Further to that, I'd like to point out that DGRs are the internationally accepted long-term management solution for the storage of high-level waste. Signatories to the Joint Convention on the Safe Management of Spent Fuel and on the Safe Management of Radioactive Waste have to report on their progress at implementing their long-term management strategy for all waste every three years. Canada is a signatory to this convention, and its 2015 report is available on the CNSC website.

As part of that reporting process, every signatory also undergoes an international peer review.

MEMBER MCDILL: I wonder if the intervenor would like to comment on that last line.

MS TILMAN: So far we haven't had some very good success with some of the DGRs for the low- and intermediate-level waste. I mean we've been through this with the three that have had to shut down. So it is a problem.

When you come to refurbishment waste, they're going to have to -- there's a facility that's going to be on-site to have this retube waste. This is high-level -- well, again, it's called intermediate-level

waste, but it is fairly high-level. That's going to impact -- that's going to be stored on-site for a number of years, I believe it's 25, and then shipped up. I'm hoping I've got that one right from OPG.

That's an extra burden, and we're hoping that -- they're hoping, rather, not me, that all of this is going to be in place. We don't know yet. And when you look at this refurbishment going on at that level of intensity, you're going to have to have something to deal with this waste, and it's going to have to be a substantial amount.

So I'm not convinced that all the ducks are in order to deal with the kind of waste. Also, the very fact that you're refurbishing, let alone if the steam generators are ending up having to be redone or become waste because one fails, where are the considerations for that?

I think that is worth a discussion to be had -- what happens? -- because that is a heck of a lot of waste. It was a situation that happened up at Bruce. They replaced the steam generators. What is OPG planning to do in that event? And that's another level of waste that's intermediate.

So I'm not -- waste is an uncomfortable situation in general. There's no safe solution. And then

another 30 years of operating these reactors, otherwise why refurbish them, is another amount of waste that we are leaving for future generations. You can't ignore that. We're passing the buck on.

THE PRESIDENT: Thank you.

Mr. Tolgyesi.

MEMBER TOLGYESI: This is regarding the slide 2 refurbishment timeline, and my question is to OPG.

This refurbishment timeline includes provisions for delays I'm quite sure. Now what happens if refurbishment of one reactor is delayed for any reasons: technical, economical, political? What will happen? It will be all postponed? And how it will affect the 235,000 hours? Because considering 8,000 hours per year of operations, for number 3 -- number 1 unit, you have one-and-a-half years leeway, and for number 4 unit you have 8,000 hours, which is about one year's leeway.

So what will happen then?

MR. REINER: Dietmar Reiner, for the record.

The schedule that's shown here is in line with the schedule that we're planning to utilize for executing the refurbishment. We do -- or we will complete the first unit before we proceed with the refurbishment of the second unit. So if there were a significant delay we

would defer the start of the second unit.

Based on what you've observed here, that would then potentially -- depending on the performance of subsequent units, potentially being to erode the margin that we have to the 235,000 hours, which is approximately a year -- just under a year, of delay.

Based on all of the planning that we're doing and the operating experience that we've got, the information from prior refurbishments, we don't anticipate running into an event that would cause that length of a delay. But we would not begin the second unit, as I said, until we've completed the first unit, and that is the schedule that we'll utilize.

MR. DUNCAN: Brian Duncan, for the record, just to add.

So the key, you know, we've done a lot of research and we've done a lot of physical testing to show that the pressure tubes we have are aging the way we expect and are still safe to run. So we know the modelling we have in place and the evidence we gather in each of our outages that those pressure tubes are absolutely safe to the 235,000 hours.

We believe that there is not a cliff effect and we believe as we age and we do more testing and more sampling and more physical examination, as well as

offline testing, that we can go beyond that.

So we'll continue to do that work to buy the margin we may need. But having said that, if we can't satisfy ourselves, if we get to a point where they've aged, we can't satisfy ourselves that they're safe or we can't satisfy the Commission that they're safe, we're not going to run them.

So that number, we use that number for our planning. Unit 4 will be about 227,000 effective full-power hours by this schedule. That gives us a margin to two thirty-five. We have every reason to believe we could go further beyond that if needed. But we will always -- you know, always -- ensure that they're safe to run.

MEMBER TOLGYESI: Staff, if it happens that they will potentially release 235,000 hours, should OPG come back for extension of operations or extension of hours because they were over past 235,000?

MR. HOWDEN: So Barclay Howden speaking.

If they were to get authorization to go to two thirty-five, because right now they only have 210,000, they would have to come back.

I'll ask Gerry Frappier to describe the things that we would review to even consider going past 235,000 effective full-power hours.

MR. FRAPPIER: Gerry Frappier, for the record.

So just to be clear, as I think was alluded to, if the Commission so chooses to allow them to operate to 235,000 hours, from the regulator's perspective that is a wall they cannot go through, so they would have to come back to the Commission if they wanted to go beyond that. Or they could decide to shut the plant down. That would be up to them to decide.

If they do want to come back, then they would have to demonstrate that the research supports the conclusion that it's good to -- you know, pick a number -- 240,000 hours or something, we would assess that case that they would make.

To be honest, we've done this several times now. As you'll remember we talked a lot about pressure tubes. I think back in March of 2014 we had quite a session on that with respect to hydrogen pickup and the research that's going on for different aspects of the continued life of pressure tubes.

Those results would have to be put together in a convincing case. The safety case would be modified. We would then come back to the Commission with sort of whatever the extension is that they would be asking for, with the determination from our side as to whether we

would recommend that as acceptable or not.

THE PRESIDENT: And those issues we're discussing, I assume that's why you have those red points, which indicate Commission updates, where any such changes in the schedule will be discussed and justified and ratified and may require reconsideration.

MR. DUNCAN: Brian Duncan, for the record.

Yeah, that's correct. I mean we see the Commission updates as more than just a schedule update though. You know, as we've committed, we see those updates to reflect on the safety performance through the project, the results of the project, the lessons learned, before we go on to the next units. We see those as being fairly comprehensive, and we're obligated to give that to you.

THE PRESIDENT: Question?

Ms Velshi.

MEMBER VELSHI: So what's the rationale for going with unit 2 first, given that it's got the least amount of full-power hours on the pressure tubes?

MR. REINER: Dietmar Reiner, for the record.

So when we developed the overall schedule -- so our plan has always been to refurbish all four Darlington units. When we developed the overall schedule, we looked at minimizing idle time of the units.

Unit 2 has the longest pressure tube life of the four units, and that's why Unit 2 is going first.

MEMBER VELSHI: I'm sorry, I thought I saw somewhere in the intervener's submission that it's got the least amount of pressure tube hours on it.

That's not correct?

MS TILMAN: If I can say, it has 188,000 effective full-power hours. It was the first unit, so it is the longest operating unit, but it has the least number of hours that it has effectively operated. Which can imply to an outsider that was there, and I've tried to raise this, was there a problem, have there been problems with the pressure tubes in that unit? And that is more what the driver is to get that unit up first.

This is what -- one reads that when you see those numbers. It's very clear that they're well below the other three units.

MR. DUNCAN: I can have Mr. Steve Woods confirm the current run. Unit 2 was the first unit up off the ground. You know, we report a bunch of different numbers, but Unit 2 has the longest effective full-power hours as we speak today. I'll have Mr. Woods confirm that in a second.

But we report other numbers, as we get to the other units in their refurb cycles. So you'll see

numbers out there that say when we get to Unit 4 we'll have X hours. That's because it's further down. But I'll just have Steve confirm my numbers.

MR. WOODS: Yes. For the record, Steve Woods.

In our original submissions for Day 1 there is a table with the effective full-power hours of the plan refurbishment outage, and Unit 2 is shown as 188,000 hours. Now my understanding, subject to confirmation, is that was -- the original refurbishment schedule was based on the approved 210,000, which we had at the time.

And for reasons of -- OPG's business reasons, we've left that schedule in place and we've adjusted units downstream to Unit 2 in terms of the order of work.

MEMBER VELSHI: Yes, I think I understand what you've shown on page 7 of your written submission does not reflect what the current state of the units is, it's what it'll be when the outage or the scheduled outage is supposed to begin. So Unit 2 may actually have more operation hours on their pressure tubes.

But I think it'll be interesting to show where they are today and then what you expect to be at the scheduled outage date.

It was confusing for me as well when I saw

that.

MR. DUNCAN: Brian Duncan, for the record.

Absolutely. So this shows at start of refurbishment for each of those units. But clearly, we can show what they all are today.

MS TILMAN: Shouldn't you, now, at the hearing?

MR. DUNCAN: Brian Duncan, for the record.

Commissioner, if the Commission wants that, we can have that in like an hour or so.

MEMBER VELSHI: Yes. I'm sure it's easy enough. Like you said, it was there for Day 1. But if you could incorporate it in that same table, that would be very helpful.

MR. DUNCAN: Absolutely.

MEMBER VELSHI: I have a request of Staff again to help the Commission with our deliberations when it comes to the term of the licence. I think it would be helpful if one page, and I know we've seen it in bits and pieces, if we were to get what the experience with refurbishment has been.

I'll read to you. So if we can start with the Pickering, each of the units, same with Bruce 1, 2, and Lepreau, what the original schedule was, what the final schedule was, and what the licence renewals were within

that period, I think that will be helpful.

MR. HOWDEN: Okay. We can provide that. For sure the licence renewals were between two and five years, but we'll give you the exact numbers. And we'll give you --

MEMBER VELSHI: The specific dates within that period.

MR. HOWDEN: Okay, we shall do that.

MEMBER VELSHI: Thank you.

MR. HOWDEN: Thanks.

THE PRESIDENT: Mr. Tolgyesi?

MEMBER TOLGYESI: According to the intervener who is citing operating licence application of OPG, it is on page 5 of intervener's submission, fourth paragraph.

You're saying, "Inspections will be conducted on the calandria internals to ensure that components that are not being removed are acceptable for continued operations."

In general, one of the preventative maintenance principles is that you replace part of equipment before it breaks down, although it is in acceptable condition to continue to work.

Now, in this case, how will you establish what's acceptable? Because it's not necessarily so easy

after to go back.

MR. DUNCAN: Brian Duncan, for the record.

Again, I'll have Mr. Woods provide some of the detail. But we have a very good understanding of how the stainless steel components in associate with the calandria age, we have a very good understanding of what we will be looking for when we do the inspection of those components.

And as you'll recall, we're not just replacing pressure tubes, we're replacing the calandria tubes as well. So we'll have a very good opportunity to get a look at the bore and the end shields. But I'll let Mr. Woods provide additional info.

MR. WOODS: For the record, Steve Woods.

Yes, in addition to Mr. Duncan's comments the entire fuel channel assembly is being replaced, including inspection of internal components to ensure that fitness for service to the end of the post-refurbishment lifetime is assured.

And these inspections are conducted in accordance with existing CSA Standards and compared to the results that we would expect to see for those components regarding their age and service life.

MEMBER TOLGYESI: Just Staff, do you have comments on this?

MR. JIN: John Jin, for the record.

With respect to the continued operation, the OPG developed the aging management program for the major components, including the pressure tubes, feeder pipes, steam generator, containment, and also for the reactor components which is the calandria which we are talking about.

And instead we reviewed the aging management program to see if it is sufficient to maintain the condition of the component based on the inspection program. And we confirm that the licensee has developed the inspection program to maintain the fitness of service.

THE PRESIDENT: Dr. Barriault?

MEMBER BARRIAULT: Thank you, Mr. Chairman.

I'm looking really at the Commission update during the period of refurbishment. My understanding is that these updates were from OPG to the Commission. But what I'm reading here is that they're actually from the Commission to whoever. I'm not clear, who do the updates go to?

MR. HOWDEN: Barclay Howden speaking.

I think in the timeline slide that was provided by the intervener the red dots are where OPG proposes to update the Commission on the refurbishment of

each unit. So each one comes after refurbishment of the unit.

We plan, from a Staff perspective, to update you on an annual basis as part of our regulatory oversight report, but we're also committed to the -- if anything comes up of interest, to update you in our monthly status report of power reactors.

MEMBER BARRIAULT: On your presentation, on page 3, the last paragraph at the bottom of the page. It says, "As noted in the figure above, an update from the CNSC is to occur." And I'm not clear, update to who?

MS TILMAN: That's a good question. And that's where I've asked the question, is these Commission updates, how does that really work? And that's basically an issue I have.

THE PRESIDENT: Well, I thought it was just explained. You didn't understand the explanation? OPG will submit an update on how it's going and CNSC will critique it in front of us.

MS TILMAN: Yes. And my question was also, will there be public input into that?

THE PRESIDENT: Well, we normally decide on our own proceeding at a time when it comes.

Any other questions?

Okay. Last thoughts?

MS TILMAN: Last thoughts. Really, I consider this one of the most serious proposals to come forward, ever. It's massive. And it is of great concern and it has to be what the Commission decides to do, they have to look at precaution, safety.

I keep hearing expressions like this isn't going to happen, this is very unlikely to happen, and so on. But that has happened. These incidents have happened at other refurbishment exercises or incidents, unexpected. We can't tell. You can't project 100 per cent certainty, that's not possible.

And this kind of schedule doesn't allow for it or this kind of thinking doesn't allow for it. So I strongly recommend the Commission give this the greatest consideration possible and look at ways to ameliorate your decision to respect the safety, nuclear safety, for all, and for the communities directly involved.

I'm also concerned that workers that are doing some of these tasks may not be fully cognizant of or may be working more without the knowledge that they may need. They're working -- some of the work may be done manually, potential for exposures are greater. And they're doing this repeatedly. There's not that many skilled workers for these type of specific tasks.

And for a schedule like this contracted

schedule, that's a lot of expectation on a workforce.

THE PRESIDENT: Thank you. Thank you for your presentation.

I think we will break now and resume at 12:50?

MR. LEBLANC: 13:50.

THE PRESIDENT: 13:50, okay.

--- Upon recessing at 12:59 p.m. /
Suspension à 12 h 59

--- Upon resuming at 1:54 p.m. /
Reprise à 13 h 54

THE PRESIDENT: Okay. We are back and ready to go with the next submission, which is an oral presentation by the Clarington Board of Trade and Office of Economic Development as outlined in CMD 15-H8.93.

I understand that Ms Hall will make the presentation. Over to you.

***CMD 15-H8.93**

Oral presentation by

**Clarington Board of Trade and Office of Economic
Development**

MS HALL: Thank you, and good afternoon.

I'd like to start off by thanking the Commission for bringing this process to the Clarington community to allow for local participation.

As referenced, my participation here today is to represent the Clarington business community as the Executive Director of the Clarington Board of Trade and Office of Economic Development, which will also be referred to today as CBOT.

With me this afternoon is our President, Mr. Donald Rickard. Mr. Rickard is also a fifth generation co-owner/operator with his brother of Ceresmore Farms, a multi-generational operation currently farming 1,300 acres here in Clarington.

We are here today to show our support for Ontario Power Generation, Darlington Nuclear Station's application for licence renewal for a 13-year term.

The Clarington Board of Trade was formed in 1998 to create a uniquely modelled business organization to represent the diverse business community that calls

Clarington home.

CBOT plays a dual role, in that we provide the same programs and services as all boards of trades and chambers of commerce which are designed to help with the business growth of our members.

In addition, we are contracted by the Municipality of Clarington to deliver the economic development services and play a significant role in community development through our efforts in business growth, job creation, and physician recruitment with a robust board of directors representing large and small business, as well as a representation covering cross-sectored and fair geographic balance across the community.

Each of our board members are connected with other groups in the community ranging from various BIAs, service groups, the Agriculture Advisory Committee, and manufacturers associations just to name a few. This allows us to be a strong conduit of information into the community and from the community to OPG.

We respect that your decision to issue re-licence for Ontario Power Generation, Darlington Nuclear, is not taken lightly and that the extended licence term to 13 years requires an additional level of consideration from the Commission.

Again, I thank you for the opportunity to bring you our local perspective on some key points for your consideration in this process.

Ontario Power Generation operates in an open and transparent manner. And I, along with many of my colleagues, had a remarkable opportunity to participate as observers at their emergency preparedness drill in May 2014. The exercise had over 50 agencies participate as a unified response team.

This initiative reiterated our confidence in the Darlington Nuclear Station operations and local emergency preparedness teams' ability to keep our community safe.

In addition, the Clarington Board of Trade and Office of Economic Development enjoy an ease of accessibility with senior management at OPG. The senior team are eager participants in local business events and initiatives and have a core willingness to share news and updates about the plant. This relationship has been strong since our inception, and continues to grow with a strong open communication path.

We are also very aware of the Darlington Nuclear refurbishment project, it is set to begin in 2016. This will be a long-term project spanning approximately 10 years. It is in the best interest of the stakeholders,

local residents, and Ontario Power Generation to secure the ability to focus on this massive undertaking with minimalized distraction. This will benefit all of Ontario from a safety, financial, and resource perspective.

The Darlington team invests a great deal of time working with several uniquely-focused community groups to ensure that their voice and needs are incorporated into the culture of operations.

As an example, the agriculture community has very individualized needs to support their ability to continue to farm and move equipment around surrounding infrastructure and actively farm land near the plant.

Our agriculture community is well represented and respected as an essential piece of our business and community fabric, and Ontario Power Generation has been a leader for 26 years in bringing them into the fold.

As Durham Region's primary employer and many of their employees being residents of Clarington, Ontario Power Generation, Darlington Nuclear, deems safety as a vital aspect of their business practices.

Along with safety, they exhibit strong involvement in community activities and events to help enrich the life of all Clarington residents and businesses. They play a very active role with the local school board

involving students in community events through community service hours and cooperative learning placements.

Ontario Power Generation, Darlington Nuclear, has continued to provide our community with open and informative education communication and are often cited as a model for good communication in our community.

They continue to provide many opportunities for community engagement, including the Darlington Nuclear Community Advisory Council, a news letter is distributed quarterly to all residents in the community. They also have a very comprehensive website from which to gather information.

As community leaders in safety and education, Ontario Power Generation, Darlington Nuclear, have shared with the community the thorough measures put in place to ensure their emergency preparedness procedures are in place and practiced on a regular basis.

Over 100,000 flashlights with clear emergency instructions have been delivered in Clarington, including to the business community, in addition to the distribution of KI pills to all residents and businesses within the 10 km radius, again with very clear instructions.

The Clarington Board of Trade has enjoyed maintaining a strong relationship with Ontario Power

Generation, Darlington Nuclear, and their staff. They have always conducted themselves in a very open, professional, and community-spirited manner. And we look forward to continuing this relationship for many years to come.

Given OPG's proven track record for operating Darlington in a safe manner for all, and their core practice of open and transparent communication in the community, we believe that granting an extended licence for a 13-year term to span over the refurbishment will allow them to seamlessly focus on their task at hand, that is to bring an additional 30 years of life to Canada's leading nuclear generation station in a safe, timely, and responsible manner.

With this said, we do believe that it is critical to build into the licence continual reviews and reports to ensure that public safety is first and foremost.

In closing, Ontario Power Generation is connected and respected in our community, and continue to demonstrate that their focus has been, remains, and plans for community safety, strength in communication and providing socioeconomic benefit in the community.

With the Darlington refurbishment project at our doorstep OPG has had a unique opportunity to take a forensic look at their business and operations. Their investment in ensuring this project is completed safely, on

time, and on budget includes clear checkpoints to track the success.

This business is highly monitored and regulated by varying bodies, including on-site presence of the CNSC. The ingrained accountability in this process helps to minimize margins of error and provides natural off-ramps and mechanisms that halt operation, if needed.

Therefore, we see the licence extension as a logical step to ensure a seamless refurbishment project while maintaining safe operation of the plant.

We thank you for taking time to listen to our local perspective and respecting that our residents and businesses value the positive, respectful, and trustworthy community partner we have in Ontario Power Generation, Darlington Nuclear.

Thank you.

THE PRESIDENT: Thank you.

Questions? Dr. McDill?

MEMBER MCDILL: Thank you for your submission.

With respect to the agricultural community, particularly I would think the dairy farmers, we had an intervener yesterday who said that there was, in terms of emergency preparedness, there was nothing specific to the agricultural and especially the farming community.

Maybe I could ask you to comment on that. You've made reference to the KI pills, to the flashlights, but maybe you could add a little bit.

MR. RICKARD: Don Rickard. So I'll respond to that.

That surprises me that they would express that, because I know that the farmers in this community have been made quite aware of, you know, the nuclear site for sure, and that we have had enough flyers and whatnot in the mail, as said, the quarterly newsletter to let us know what is happening. Plus, we're within the 10 km radius ourselves, so we do have those pills.

So it kind of surprises me that someone would make that comment, but...

MEMBER MCDILL: If there were an event -- are you dairy or...?

MR. RICKARD: We're in cash cropping.

MEMBER MCDILL: I think for someone like a dairy farmer, for example, what do you do with the milk in an emergency? So these are the questions I think that the intervener yesterday was trying to get at. You can't put the milk into the -- maybe you can or cannot put the milk into the food distribution system.

MR. RICKARD: Well, I know that the milk is picked up everyday and, if there's an issue with the

milk, it just won't be picked up and it will be probably disposed of in some other fashion.

But, again, I'm not in the dairy industry, so I can't answer that specifically.

THE PRESIDENT: The question really is are you involved in the development of the emergency plan for the region?

MS HALL: I'll answer that. Sheila Hall, for the record.

I know that I also sit on the Community Advisory Committee and there is representation I think that there's a minimum of four agriculture representatives on that committee, some of them dairy farmers, some of them cash crop. So I know that their voice has been heard and solicited, so I would assume that their concerns have been addressed and brought to the plan.

THE PRESIDENT: Thank you.

I'd like to move on.

MEMBER TOLGYESI: You said their voice was maybe listened. But are you aware or to what extent you are of emergency planning? If something happens, do you know what to do?

MS HALL: I sure do. I know that I'm to stay close to home and listen to the reports in the media and get my direction from there.

THE PRESIDENT: Okay. Thank you.

Any final thoughts? Yes?

MS HALL: No. Again, I just want to reiterate thank you for giving our local community an opportunity to give you a local perspective on how we feel about Ontario Power Generation and their operation.

THE PRESIDENT: Okay. Thank you for your submission.

MS HALL: Thank you.

THE PRESIDENT: I'd like to move on to the next submission, which is an oral presentation by Mr. Bertrand as outlined in CMD 15-H8.37 and 8.37A.

Mr. Bertrand?

***CMD 15-H8.37/15-H8.37A**

Oral presentation by Louis Bertrand

MR. BERTRAND: Thank you, Mr. Chairman, Members of the Commission. Good afternoon.

My name is Louis Bertrand, I am a professional engineer and I live within the 10 km radius.

My engineering experience is in electronic product design, including embedded software as well as information technology and information security.

Monsieur le Président et Membres de la

Commission, je vous souhaite bonjour. Je m'appelle Louis Bertrand. Je suis ingénieur professionnel et j'habite dans la zone de 10 kilomètres. Mon expérience en génie compte le design de produits électroniques ainsi que l'informatique et la sécurité des données.

Je vais continuer ma présentation en anglais, mais si on me pose une question en français, j'essaierai dans la mesure du possible d'y répondre pareillement.

In my September 28 written submission CMD 15-H8.37, I mentioned several external factors that would reduce OPG's institutional care and capacity to carryout its plans and to continue to operate the Darlington reactor safely while maintaining its business model.

The way we produce electricity is receiving the critical gaze of society on an unprecedented scale. In French it's called un débat de société.

Polluting and hazardous non-renewable sources, nuclear included, are becoming less and less acceptable, while cleaner and safer renewable sources are becoming ever more affordable.

The large share of nuclear in Ontario's electricity supply mix is based partly on the political will of Ontario governments since the 1970s to keep it that way.

However, the cost of solar photovoltaics is dropping faster than expected and demands for lower electricity pricing is putting additional pressure on the government to limit rate increases and to integrate rate-payer-owned PV into the grid.

At the upcoming COP 21 Climate Conference in Paris, if Canada commits to significant greenhouse gas reductions, as they are needed to mitigate global warming, there will be an urgent need to add solar, wind, and geothermal capacity to the grid; all three technologies being able to come online faster than any nuclear project as well as being much safer.

Recognizing that any money committed to nuclear would starve renewables and that cost and schedule overruns in nuclear projects are politically toxic, the government could choose to take one of those so-called off-ramps that are built into the long-term energy plan.

I also noted that OPG's revenues have declined in recent years and that the upcoming Darlington rebuilds, the permanent shutdown of the Pickering station, will further cut revenues and increase expenses.

Adding hydro power to OPG's generation inventory does not seem to have the sufficient potential to cover the cost of nuclear. In other words, OPG is betting the farm on nuclear.

The other concern I have with OPG's institutional capability to carryout its plans is the reliance on external contractors and the loss of deep knowledge when those contracts are done and the temporary staff moves on.

Reading a manual is not the same as actual working experience. How then will OPG compensate for all that experience walking out the door?

To be sure, I am not asking the Commission to make any decisions on the viability of nuclear power or to weigh in on the social acceptability of the risks.

However, the Commission should be concerned with the ability of OPG to maintain safety while executing their plans. Can they in fact carryout their plans? Can they cover cost and schedule overruns? Do they know what they would do if the Ontario Government decides against continuing the Darlington rebuild?

To reiterate the recommendation from my September 28 submission, the Commission should not grant a licence beyond one or two years without a thorough examination by independent business analysts of OPG's capacity as a business organization to carryout its plans in the face of an uncertain future.

In my supplementary submission of October 19 I discussed cyber security threats to nuclear power

plants and how the nuclear industry in general does not have an adequate security culture. The Chatham House report that I cited discusses the tension between operational technology and IT and a reluctance of the industry to openly address the problem.

Cyber security is related to safety but the essential difference is insecurity. You have an intelligent adversary deliberately trying to make systems fail. This is quite different than pumps and pipes that fail with a generally known probability distribution.

I notice that the CNSC staff submission buries cyber security in the same section as physical security -- hint, they are not the same -- and that the proposed Licence Conditions Handbook does not refer to the new CSA standard on cyber security N290.7 published in 2014.

I would like to summarize my recommendations on cyber security:

- Amend the Licence Conditions Handbook to include CSA N290.7;

- Restrict the operating licence to a reasonable time, one or two years at the most, so that OPG can return to the Commission with a cyber security program in place that includes regular drills and penetration tests by independent security auditors acting in an adversarial

role;

- Evidence of auditing the supply chain for security practices to standards such as the SEI CERT Coding Standards.

Now, if I may, some concluding remarks.

The stakes are high for OPG. They must deliver on this project. Otherwise, their business model is in jeopardy. I worry that this tightrope act on a grand scale will increase the tension between revenue generation and safety.

I can understand why OPG wants, as they say, a consistent licensing basis during this project, most likely to minimize the potential schedule and budget impacts of changing licence conditions. In fact, the 13-year request seems to be an acknowledgement by OPG of just how ambitious their plans really are.

But from the public's point of view, the so-called consistent licensing basis could mean that potential safety improvements are not mandated until the licence expires. Since the Commission is not in the habit of imposing changes frivolously, it seems to me that the argument for a consistent licensing basis is not grounded in safety.

All this is to argue against granting the 13-year licence. The best way to ensure that safety

considerations are at the forefront of the Commission's priorities is to make the ongoing regulation process transparent and the best way to do that is to trigger the relicensing process frequently.

Finally, I wish to lend my voice in support of the recommendations by other intervenors to improve the planning to respond to a large-scale nuclear emergency, specifically to include an INES Level 7 and early release accident in the planning basis for the Durham and Provincial Nuclear Emergency Plans:

- Develop a detailed and credible emergency plan that includes possible evacuation of the primary zone, with detailed inventories of transportation capabilities and requirements, along with adequate notification of residents;

- Better define the secondary zone and clearly identify the emergency measures to be taken there; and

- Only grant an extension of the Darlington operating licence and require OPG to return to the Commission with well-developed plans to handle a severe accident in accordance with Regulatory Document 2.10.1.

Mr. Chairman, Members of the Commission, I thank you for your attention and I welcome your questions.

THE PRESIDENT: Thank you. Merci

beaucoup.

Monsieur Harvey...?

MEMBRE HARVEY : Merci, Monsieur le
Président.

Cyber security is very important for sure, and more and more important, so I would like to hear from OPG what it has done in that regard in the organization and how can we be certain that the Darlington plant is safe?

MR. DUNCAN: Brian Duncan for the record.

I'm going to let my colleagues give you the details but there are a couple of things to know.

All of our staff have had the training appropriate for their interface on --awareness training, if you will, on cyber security.

We have protections for our networks but the most important thing is the physical separation of the control computers and the control schemes that operate the reactors and operate the support equipment. It is completely and absolutely physically separated from any sort of outside input source separated from our network. It's a standalone system and that is important because if you don't have links it's very difficult to get in there and create harm.

But I will let my team provide some additional insight.

MR. WOODS: For the record, Steve Woods.

Cyber security is of utmost importance to OPG and OPG has implemented a cyber security program consistent with CSA Standard N290.7 and in compliance with CNSC expectations. OPG is represented on the N290.7 Standards Committee and participates internationally via the IAEA.

OPG's safeguards ensure the highest degree of protection possible. As Mr. Duncan mentioned, cyber security awareness training for all employees and contractors with access to the corporate LAN has been provided and if additional details regarding OPG activities are required, I have with me some subject matter experts to answer additional questions.

MEMBER HARVEY: I will ask the staff. What kind of requirements and do you monitor something in cyber security?

MR. HOWDEN: Yes. Barclay Howden speaking.

Just to start off with, CSA Standard 290.7 has been formally sent to the licensees on October 8th of this year. We expect a submission from them for their implementation plan or if they deem they are in compliance, a demonstration of that, which will then be included in the LCH, the Licence Conditions Handbook that the intervenor

stated. The Licence Conditions Handbook is under staff control, with me as the signing authority, so the intent is to put it in.

Within there now we have regulatory expectations. I'm going to ask Mr. Greg Lamarre to talk about the existing status of the implementation of cyber security at Darlington as well as the inspection results of an inspection that we did earlier this year.

MR. LAMARRE: Thank you.

Greg Lamarre, Director of the Systems Engineering Division.

Just to complement what Mr. Howden has said, cyber security oversight at the CNSC began in approximately 2008 with the issuance of a regulatory letter requiring the licensees to develop a comprehensive cyber security program against certain IAEA and NRC and NEI standards and guides in place at the time.

All NPP licensees, including OPG Darlington, submitted comprehensive cyber security programs in approximately 2009. Staff has reviewed them and deemed them acceptable and all outstanding action items associated with OPG Darlington's cyber security program have now been closed.

Further, staff has also carried out a first pilot inspection of the cyber security program at

Darlington in January of this year and there were some findings that came out of that. I would say that they were relatively minor in nature. Darlington obviously has an action plan in place to close them.

If the Commission would like a little bit more information in terms of the contents of what that is in terms of sensitive information, then I would have to suggest we go in camera.

But in essence Darlington has a robust cyber security program in place and 290.7 and its implementation will be a further improvement on that program.

THE PRESIDENT: I would like to hear from the intervenor because he is now the second intervenor -- we are going to hear from another intervenor tomorrow -- both criticizing N290.7 as being too high level and not enough detail, and the other intervenor of course is advocating open source. I don't know if you had a chance to read it and I would like your views about what's wrong with this standard.

MR. BERTRAND: Thank you, Mr. Chairman.
Louis Bertrand for the record.

Yes, N290.7 really is an administrative document that defines, to the best of my understanding, who is responsible for what and how to identify, you know,

security critical assets or security assets that need to be protected and then add a further level of detail how to actually protect those.

It doesn't mandate how those inspections are going to be done and my point with adversarial inspections or audits is basically the so-called white hat hacking, where you basically bring in a team of really smart people and they try to get at your email or see what they can get at, essentially pretending that they are hackers.

That is one of those things where you -- that's when you find out where the flaws really are and a lot of times the vendors will not disclose a flaw because they figure either it's not important, they haven't found it or they think, well, it's just a bug, but they don't think it's exploitable as a security vulnerability.

If you will excuse me a little side trip, I spent an afternoon reading court testimony from a court case in Oklahoma having to do with Toyota unintended acceleration accidents and what happened is that for the prosecution, a team of three or four engineers went through Toyota source code for a 2005 Camry and were able to reproduce a case where pumping the brakes would actually exacerbate the fault. You had to actually remove your foot from the break for about a second and let the system reset

itself before it would recognize that the brake was pressed and shut off the throttle.

It is really hard to get that kind of stuff right and the point there is that Toyota had received this component from one of their suppliers and really hadn't inspected the source code, and once the inspection for the prosecution carried through they found some really horrible things in terms of really bad coding practices and really, in their case, a degraded security culture.

That's why I'm saying the devil is in the details. Computers are hard, computer security is even harder and I would really like to see some concrete evidence that this kind of really hard-nosed inspection is happening.

Thank you.

THE PRESIDENT: OPG, what kind of inspection do you do on your system? I know you talked about the gap, making sure the critical systems are not connected, but on the rest of the system, do you do any kind of hard inspection and, staff, is it kind of mandatory to do this?

MR. DUNCAN: Brian Duncan for the record.

The control systems are segregated architecturally, as I said, but of course, you know, the business of the company runs on the LAN and we have an

entire organization that looks at the performance of the system, external attacks on the system. They monitor for that. They do testing of the system itself.

Again, let me turn it over to my colleagues, though, for the fine details.

MR. WOODS: For the record, Steve Woods. I would like to direct the Commission's question to Jennifer Wong.

MS WONG: For the record, this is Jennifer Wong, Senior Manager of Cyber Security at OPG.

We do do annual vulnerability testing on our systems and the vulnerability testing does include our critical business systems that support business functions.

THE PRESIDENT: Staff?

MR. LAMARRE: Greg Lamarre for the record. Yes, there is a requirement for the licensees to do vulnerability assessments -- is the way that OPG has stated. So from staff's assessment, those are being done as per regulatory expectations and requirements. We have no issues with that at all.

And a couple of other issues, perhaps while I have the microphone, that were raised.

Some of the controls -- I think the intervenor was saying that the controls within N290.7 were somewhat lacking.

Just to give Commission Members and members of the public a bit of a sense, there are a total of 76 controls dictated within N290.7. Those are broken out between technical controls, operational controls and management controls.

The level of specificity, I think, is appropriate for the licensee operator to implement and it's all based upon the fact that it's up to OPG Darlington to assess all of the cyber assets and then assess both the safety or security significance and the vulnerability of all of the cyber essential assets and then to use that to drive which of the 76 controls they will apply.

There is a baseline five controls that have to be applied to all cyber essential assets regardless of their safety security significance and their vulnerability. For ones that are higher safety significance, higher vulnerability, you will see the entirety of the 76 cyber security controls being implemented.

So I don't want anybody to be left with the impression that N290.7 is lacking in its specificity in terms of the types of controls that have to be implemented.

The other important part to mention is that the N290.7 committee was made up of obviously CNSC staff, industry, suppliers, SMR vendors. It was quite a

wide-ranging community of cyber security experts.

And also another very important part to add to this is that many of those members sat on IAEA committees and others that developed the IAEA cyber security standards, and the N290.7 Standard is also very strongly benchmarked against other national standards such as the USNRC Reg Guide 5.71 and others. So we find that to be a very robust standard. I just didn't want anybody to be left with the impression that it was anything but.

THE PRESIDENT: Thank you.

Ms Velshi?

MEMBER VELSHI: A question for OPG. One of the other issues the intervenors raised is around institutional capacity and given the long-term nature of this project, how are you making sure that knowledge is getting retained and you are not relearning things and there is a seamless transition as people move?

MR. DUNCAN: Brian Duncan for the record.

So one of the things across the industry, and certainly we are no different, that we are faced with is a turnover of staff and we plan for that, we map that. We have a very robust succession planning process but it's more than that. It is more than just selecting who the next supervisor or who the next manager will be. It is about knowledge retention. It is about overlapping roles

as we bring new people into place so that they can gain and share in the experience of an outgoing individual and be able to carry that forward.

When we look at a project like the refurbishment where we are going to bring people in at the front end and they will develop a tremendous amount of capability and talent, as we look forward to the back end of that project, the best of those people will carry on and will become our full-time employees because they will have the skills, they will have the talent we will need for the second life of this station.

So a lot of planning goes into that. A lot of thinking goes into how we are going to manage that precious resource because at the end of the day it is more than just basic knowledge, it's the experience that people gain through the course of their activities that we want to be able to profit from, benefit from and be able to carry that forward.

THE PRESIDENT: Anybody else? Any other questions?

MEMBER VELSHI: Open source code comments.

THE PRESIDENT: Open source code?

MR. BERTRAND: Oh, yes. Louis Bertrand for the record.

Open source -- and I will defer to my

friend A.J. Kehoe who will be speaking I believe tomorrow.

Generally what happens is there is a truism in -- let's say cryptography is a good example where you can have the algorithm fully known, and this is the case with the new advanced encryption standard that the American government came out. They actually had a contest to see who could come up with -- they just opened it up to everybody. What is not revealed is the code, is the combination. So you can know how a padlock works but not be able to open it because you don't know what the combination is. That is the general principle.

Being able to have more than the development team -- for instance, coming back to that Toyota software accident, once a team of professionals was able to look at that source code they could say no, Toyota was not following accepted industry practices. The standard is MISRA and it's for the automotive industry.

The other point about open source is that you can look for bugs, you can -- I'm afraid I lost my -- it's one of those things, it's really complicated and I'm trying to --

THE PRESIDENT: Are you going to be here tomorrow?

MR. BERTRAND: Unfortunately, no, I have to work. I teach at a college and my students really want

me there.

--- Laughter

THE PRESIDENT: I think Mr. Kehoe is speaking at the end of the afternoon, so you may be able to actually either listen or --

MR. BERTRAND: I might be able to, yes. Thank you.

The point is that a second set of eyes is always a good thing, and the failure of software, it's not like a pump or a pipe failing. If the software fails, let's say in the operating system, then all the tasks that depend on that operating system fail. Therefore, it's really important to know what you are getting is not just the hardware but it's actually software. When you think about it, these are the most complicated machines that we have ever designed as humanity, millions and millions of lines of code.

THE PRESIDENT: Okay, thank you. Any final thoughts?

MR. BERTRAND: Yes. Thank you for the opportunity.

I hear a lot about safety culture and I also hear about, you know, like we are all continuously improving and we have heard this over and over again.

Coming back to that Toyota thing, which

one of the expert testimony was saying, in the security culture, either security is number one or you don't have it. Really, it is a binary thing.

My concern is that the pressures on OPG to deliver on this project are going to erode safety culture and perhaps cause the organization to start cutting corners. That is my big concern.

Thank you for the opportunity.

THE PRESIDENT: Thank you. Thank you for your submission.

***CMD 15-H8.51**

Oral presentation by Kathleen Chung

THE PRESIDENT: I would like to move to the next submission, which is an oral presentation by Ms Chung, as outlined in CMD 15-H8.51. The floor is yours.

MS CHUNG: Hello. This is a great day. Ding-dong, Harper's gone. I hope things will change but we shall see.

My name is Kathleen Chung and I am sad to be here again. I wish I didn't have to be here to go through this experience but I am here to call on CNSC to refuse OPG's application to renew its power reactor operating licence for Darlington and to refuse OPG

permission to refurbish any Darlington reactors.

I speak again on behalf of my five grandchildren who all live and go to school within range of Pickering and Darlington reactors. And last time I was here, none of the people on your Panel lived anywhere near a nuclear reactor. I wonder how that is now. Do any of you live near a nuclear plant? No. See. So why should you be able to tell us that we should live in danger?

I am a member of the Canadian Voice of Women for Peace, the Older Women's Network, Canadian Unitarians for Social Justice and the Green Sanctuary Group of my church.

Again, I remind you of the Haida proverb: We do not inherit the earth from our ancestors, we borrow it from our children.

This hearing, like all the others that have preceded it, is about future generations. We are saddling them with a poisonous legacy and that is not one I want to leave for my grandchildren or for your grandchildren.

We have the resources to create a different future. The people of Ontario are far ahead of the government, both the provincial and federal government, and local government from what I have heard, in seeing the urgency of the problem and our need to develop renewable

power sources and conserve energy.

What is still holding Ontario back from developing renewable energy sources? Well, it's still the old boys' network that controls the power industry and the construction industry: lack of vision and greed. The Government of Ontario must rise above these and the government must lead, which it is not doing now.

There comes a time when we have to cut our losses, so we must abandon any continuation of nuclear power generation. Not once has the cost of building or refurbishing any Canadian nuclear plant come in anywhere near budget. The cost overruns have been unconscionable.

We all know it's just a get-rich scheme for nuclear executives, ex-politicians, consultants and a few super techies. It's a make-work project for nuclear workers, construction and management, although skills of those people are transferable to renewable energy.

My biggest concern is safety. When Harper fired Linda Keen, that proved to me that safety is not a concern of the federal government. I hope it will be a concern of the new one. Profit is the goal, but profit for whom? Certainly not for the public.

The CNSC mandate is to protect the health and safety of Canadian citizens from any harm that may result from the operation of a nuclear facility. So I

can't help wondering why you are allowing so many presentations arguing not how to protect us but how to make a profit off us. This is a huge conflict of interest.

Companies like SNC-Lavalin are not here to tell you how to keep local people safe. They just want you to approve the continuation of the Darlington plant so they can continue to control and fleece us.

The arguments by local business groups that OPG donates money to charities and creates jobs are irrelevant to the issue of safety.

We have been warned about organized crime in the construction industry. Are we at risk of dangerously substandard work at Darlington? What happens when that aging concrete cracks? Is the Darlington plant just as safe as the Montreal overpasses?

How can you look a taxpayer in the face and honestly say that nuclear makes any sense at all, whether financially, technologically, environmentally or medically?

Hot water released from nuclear plants damages plant and animal life in Lake Ontario but the local municipality opposes cooling towers because politicians and real estate agents are afraid the sight of cooling towers will frighten away potential homebuyers and result in a depression of real estate prices. Is that more important

than safety?

You know the lessons from Fukushima, overconfidence, which I see a lot of here. No system is foolproof. Workers suffer the consequences of "accidents," including radiation sickness and death. Surrounding communities are decimated, forever poisoned. All the people in the area are traumatized. Farmland and water are poisoned and we are risking the water of millions of Canadians and Americans. The people's trust in government and industry is destroyed forever.

The lesson of potassium iodide withheld from people in areas around Fukushima and Chernobyl, given too late and to too few people. We know now that it should be distributed to everyone who lives, works or goes to school within 50 kilometres of a nuclear plant. That is what the rule is in Switzerland now. So while I applaud your new rule that KI must go to all within 10 kilometres of Darlington and Pickering, that's not enough.

The last time we met I told you that potassium iodide must be administered four hours before exposure for best results and you didn't believe me, but when you asked a doctor in the audience to say that I was wrong, he said that my facts were correct. So now, you have issued the 10-kilometre order.

But 10 kilometres is not a wide enough

radius. Please listen to me, your own life or that of your child or grandchild could depend on this. You should be exercising the precautionary principle: Where there is a suggestion of harm to any segment of the population, the burden of proof must be on those wanting to continue the exposure. The exposure should cease until this is done.

Why is there so much secrecy, that the public is not informed about KI and not told of the emergency plans?

All the Greater Toronto Area is at risk if there is a nuclear incident at Darlington. In the City of Toronto's booklet that is distributed to the public, here is the entire instruction regarding what to do in the event of a nuclear accident, and I quote:

"Authorities will provide detailed instructions regarding what to do in the event of a nuclear power accident."

That's it. No other instructions. So when everybody is panicking, including municipal officials, and running away, how are we, the general public, to know what to do? And why has the CNSC not made it mandatory that all Torontonians are instructed clearly on what to do in a nuclear emergency?

Here is the Chalk River brochure. If

Chalk River can inform the public at least a little bit, why can't Toronto and Darlington?

I was horrified to hear that the CNSC had censored the results of the study into a Fukushima-scale nuclear accident at Darlington. Why did you censor a scientific report? Was this on Harper's orders? He doesn't like scientists, I know. You are paid by me, by all taxpayers to protect us from this very censorship.

And what are you doing with nuclear waste? Will it be a nuclear waste accident that brings on nuclear disaster? If nuclear plants are so safe, why are the builders and operators not required to assume all the risks in case of breakdown?

I will believe all these plants are safe when the builders accept full liability for all future damages of any kind forever, including nuclear accidents, breakdowns and disposal of spent fuel.

Why is there a limit on the liability of the owners, operators and builders? Why do the taxpayers have to take the liability when we are the ones that are going to be harmed? The ones that make the profit should take full liability.

Nuclear plants are not valid alternatives with regard to greenhouse gases. If you take into account all the components going into it, materials, trucking,

fuel, electricity, all the embodied energy that goes into construction, nuclear plants are a threat to the environment long before they come online. And long-range transmission lines are wasteful of energy, both in terms of construction and the loss of efficiency over long distances.

Small, local wind farms and other renewables keep costs and energy losses to a minimum and also cause fewer blackouts. Every time I see one of those ugly transmission lines when I'm driving along the 401 and there are these transmission lines crisscrossing everywhere coming from Darlington and Pickering, I imagine how wonderful it would be if that were replaced by a line of wind turbines with solar panels on them.

Nuclear is the last century's technology. It's time for Ontario and Canada to enter the 21st century. Think about what it means for all of our grandchildren. I urge you: Do not extend the life of the Darlington nuclear plant, don't refurbish it and don't build more reactors for the sake of all of our grandchildren.

And I bring a very brief message from the Toronto Raging Grannies:

"Nuclear stations are not worth the
danger to us and the earth,
Cost and cancer, waste unclean

defiles the earth that should be
green.

No nuclear power

No nuclear waste

No nuclear power to pollute for years
to come."

THE PRESIDENT: Thank you.

Does anybody have a question?

MEMBER MCDILL: (Off microphone).

THE PRESIDENT: Are you sure? Okay, go
ahead.

MS CHUNG: You're not sure anybody would
have a question?

MEMBER MCDILL: No, I'm sure I have a
question. I would like staff to comment on the -- you
weren't here yesterday? No, okay. And that is the only
reason I would repeat the question.

To go over again, the intervenor has used
"censored the results" and I think maybe since there are
new people in the audience, we should address this again
with respect to suppression of anything.

MR. HOWDEN: Barclay Howden speaking.

Yesterday we had a long discussion on the
SARP report and the report that was released and we also
discussed about a lot of the internal consultations that

are done within staff, we call it internal debate, to allow ourselves to come up with something that meets the intention of the Commission. And so throughout that, we indicated that we don't, one, suppress information or, two, suppress our staff. They are allowed to express their opinions.

We have also put in processes internally to make sure that staff feel protected and can raise their issues in an honest and fair fashion, and then in the end when we have reached a decision on something we release it to the public, as we have done with the SARP report.

THE PRESIDENT: Thank you.

Any other questions?

You have the final thought.

MS CHUNG: Stop nuclear power. We don't need it. We need to save the planet.

THE PRESIDENT: Thank you.

***CMD 15-H8.149/15-H8.149A**

Oral presentation by Black & McDonald

THE PRESIDENT: I would like to move to the next submission, which is an oral presentation from Black & McDonald, as outlined in CMD 15-H8.149 and 15-H8.149A.

I understand Mr. Healy will make the presentation. Over to you.

MR. HEALY: Good afternoon. Mark Healy, Regional Vice President for Black & McDonald, for the record.

Good afternoon, Mr. Chair and Commission members.

Just a little background about Black & McDonald. We operate across the country. We have over 4,500 employees working out of 25 different offices, also in the United States. For the past 15 years we have been working with OPG and proud to be providing services and products to them for Darlington as well as other nuclear stations in the Province of Ontario.

We strive to be a corporate citizen for all our areas in which we work. Our employees participate in the community, we want our community to be safe, and most of our employees in this region work and live around the area of Darlington.

Our vision is to be a leading construction and maintenance contractor delivering safely to our client and to the nuclear industry and with a mission to be flawless in our execution, provide quality services to ensure that all of our nuclear clients are successful. We have a high degree of core values that work in a team

environment where the safety of our people and the protection of the environment take the top priority. Any other business metric is secondary to that.

We employ at Darlington on average 600 people, most who live and reside in the area. We provide that in a very safe and quality way to maintain the sites on behalf of our clients and we participated recently with the outages at both facilities and look to support the refurbishment at Darlington.

All our managers/employees at Black McDonald have an overriding process that puts them, first and foremost, all the employees in a safe position to do their work, provide them with the necessary tools and PPE to carry out tasks in a safe manner.

We have worked as an organization over 3.4 million hours without lost time injury and our focus is on preventing injuries and preventing any events prior to their occurrence. So very proactive processes and methods.

We also benchmark and adopt best practices from other nuclear utilities, GTAA, Department of National Defence and other oil and gas operations.

Our safety program was recently awarded the IHSA Certificate of Recognition.

From a quality perspective, we have a very rigorous quality program that meets nuclear industry

standards and our clients' expectations. Black McDonald's first quality program actually was established in 1978 to satisfy Ontario Hydro requirements. And since the initial establishment of this program, it has matured significantly and meets nuclear industry codes and standards such as CSA N-286-05 and -12, CSA Z-299.1, CSA N-285.0, CSA B-51, ASME NCA-3800 and ASME -4000.

We hold various certificates of authorization for pressure browning work for non-nuclear and nuclear applications.

And our quality programs have been accepted by all nuclear utilities in Canada.

Our quality program is the core cornerstone of our business. We strive to continually improve the effectiveness of our program to meet our customers' requirements.

In accomplishing that, we have tremendous amount of oversight by OPG. Ontario Power Generation hold themselves and all their suppliers accountable to the highest standards of safety and quality. We see that on a daily basis and our safety and quality programs, through observation, verification, monitoring and auditing they stay in touch with our performance and keep on top of it from a daily perspective of everything we do.

And any actions that are coming from those

reviews and from this oversighted document and corrective action process and reported back to OPG.

Also, Black McDonald has a nuclear safety review board which conducts independent assessments of our performance and reports directly to senior management.

In conclusion, Darlington Nuclear Generating Station provides significant benefit to our employees, the community, the Province of Ontario and to Canada through safe and reliable electricity generation, protection of people and the environment, support for local communities and a contribution to the provincial economy. Darlington will continue to provide long-term benefits through successful completion of the refurbishment program.

And on behalf of Black McDonald, we support the continued operation and refurbishment of Darlington Nuclear Generating Station and recommend that the Canadian Nuclear Safety Commission renew the operating licence to December 1st, 2028.

Thank you for the time to come and speak here today.

THE PRESIDENT: Thank you. Comment? Question? Just -- you mention that you are also a supplier to the gas and defence industries, if I got it right.

MR. HEALY: Yes.

THE PRESIDENT: How would you compare the

quality of the supply chain to all those industries?

MR. HEALY: Mark Healy, for the record.

I've had the good fortune to work in those other industries as well and I have to say that the nuclear safety culture, and in particular here and in our association with OPG, there is a high reference to safety and quality in everything that I've seen and done and our company, every discussion, every little bit of work that's been done on behalf of OPG, the very first thing that ever is discussed is the safety, performance, quality and are we doing things to protect people in the environment.

So the culture is very much aligned. And our team who work across the country in other industries, particularly of reference would be the oil and gas industry, this is top-notch, the nuclear safety culture has a high regard for people's safety and for the protection of the environment.

THE PRESIDENT: So are you teaching the oil and gas how to become safer? You don't have to answer it.

Thank you for your intervention.

MR. HEALY: Thank you.

THE PRESIDENT: Go ahead.

MR. LEBLANC: So the next presentation was to be an oral presentation by the Coalition for Nuclear

Free Great Lakes. They just informed us that they wanted their submission to be considered as a written submission only. This is CMD 15-H8.147. And, Mr. Chair, I suggest that we proceed to ask the Members if they have any questions on this submission.

THE PRESIDENT: Okay. Has everybody found it?

MEMBER MCDILL: Yes.

THE PRESIDENT: Any question?

MEMBER TOLGYESI: No.

THE PRESIDENT: Okay. Thank you.

MR. LEBLANC: So the next submission is from Severin Hoch. Is this person in the room? No. So in this context -- and is this person on the phone? No. So we have not heard from this person, so we will treat it as a written submission.

***CMD 15-H8.45**

Written Submission from Severin Hoch

MR. LEBLANC: So if there's any questions from the Commission Members?

THE PRESIDENT: No questions.

MR. LEBLANC: No question?

THE PRESIDENT: No.

MR. LEBLANC: Okay. I'll just take it out. So the next presentation is an oral presentation by Sandra Sinayuk. We want to verify, this will be by teleconference, I understand. I just want confirmation from our tech people whether she is online. Not at this time. Okay.

So this takes us to the next presentation --

THE PRESIDENT: What do we do with this?

MR. LEBLANC: We'll just wait to see. I'll get advice as to where Mrs. Sinayuk -- because I believe we heard from her today and she was going to be linked.

THE PRESIDENT: I'll just tick it off.

MR. LEBLANC: Yeah, okay.

THE PRESIDENT: Try not to...

MR. LEBLANC: And the next presentation would be from Evelyn Butler. Oh, Ms Butler is just coming in as we speak.

Oh, did I miss one? Yes, sorry, my mistake. Sorry, Ms Butler, you can take...

The next presentation is from Durham Nuclear Awareness which had changed with Ms Stevenson this morning.

I apologize for this, Ms McNeill. I'll

let the President formally introduce you.

THE PRESIDENT: Okay. So the next oral presentation is from the Durham Nuclear Awareness as outlined in CMD 15-H8.29 and H8.29A and I understand that Ms McNeill will make the presentation.

Go ahead then, fine.

***CMD 15-H8.29/H8.29A**

Oral Presentation by Durham Nuclear Awareness

MS McNEILL: Okay. Good afternoon everyone. My name is Janet McNeill and I'm Coordinator of Durham Nuclear Awareness.

DNA came together in the wake of the Chernobyl accident in April, 1986 and has been advocating for better nuclear emergency planning since the late 1980s.

We work on several fronts in this regard. We're very grateful to have received funding from CNSC to do opinion polling on emergency planning awareness in the 10K zone around the Darlington plant.

Paul Seccaspina from Oracle Poll will spend the next five minutes touching on the key highlights from the poll's findings. Pickering resident Barb Post will then comment on the polling project results and I'll wind up with our recommendations to the CNSC.

MR. SECCASPINA: Thank you very much. So I'm here to present the results from a public opinion survey we conducted from August 13th to the 21st of this year, 500 residents, 18 years of age and older, from a radius of 10 kilometres within the generating station.

So I'll get right to the findings. What we found was that when it came to concern over a possible accident at the station, there was a very low level of concern, only 23 per cent. There were some spikes with respect to geography, the closer you got to the station, within three kilometres, concern was higher at 30 per cent. Beyond that radius it dropped to 20 per cent.

So despite the relative low level of concern, there is a sense that it is important to have a detailed nuclear plan in place to protect the residents of the region from, you know, a large-scale accident at the reactor, 86 per cent said that that was important to them.

We asked the residents to rate their level of awareness around a series of emergency plans. Awareness levels weren't that high overall, but they were higher with respect to the need to listen to accurate media sources followed by when to use the KI pills.

Awareness was very low and unawareness -- and what we are presenting appears in the second paragraph.

The lack of awareness or unawareness was

very high for the self-decontamination centre, 71 percent unaware; location of monitoring stations, 72 percent unaware.

Awareness was also -- unawareness or lack of awareness was also high as it related to the location of emergency shelters, 62 percent; emergency plans in place for children and seniors, 59 percent; and the location of public reception centres, 61 percent.

There was a split of opinion on awareness of evacuation plans, 56 percent were unaware, 37 percent were aware; evacuation routes, 50 percent unaware, 39 percent unaware; and remaining in place, 52 to 43 percent, 52 percent being unaware.

And once again, there was a split of opinion on the issue of awareness of the meaning of emergency sirens, 49 percent being aware and 43 percent being unaware.

When it came to them rating their level of readiness or preparedness for a possible accident at the generating station, only 31 percent said that they were prepared. Unprepared was 58 percent. Interestingly enough, those most likely to say they were unprepared were 18 to 34-year-olds, 65 percent, and those earning less than \$75,000, 60 percent.

We asked a question on preferred sources

to get information in the event of a nuclear accident and when you look at the top three, we are looking at traditional media sources, radio and TV coming up on top. Electronic media did come up when you combine the Internet website, social media and emails, 29 percent. So those were the top three group responses, so radio, TV and electronic sources.

When it came to what would be the most effective way to engage residents in the community, well, mail came up as the single most-cited response, but when you look at public meetings and when we combine all outreach methods, for example, not only public meetings at 21 but public tours of the facility, school visits, 4 percent, we are also up to 29 percent with that face-to-face or some face-to-face approach.

The last couple of slides here.

This one here shows issues around family emergency planning: 80 percent of residents do not have an emergency plan in place in the event of a nuclear emergency; only 29 percent were aware of emergency planning for children, seniors or others at public institutions in the community; only 17 percent of residents who would be separated or possibly be separated from family or loved ones or close ones in the event of an emergency have a plan in place to reunite with them -- only 17 percent. And the

last bullet point, as we all know, 92 percent or most residences have a vehicle in place.

Last slide and then I will hand it off.

There is a high level of interest in obtaining information and that's what this slide does show: 93 percent would like information on emergency reception centres, information around that; 88 percent would like contact information or sources; 88 percent, information about sheltering; 85 percent, information about public alerting systems; and 83 percent, 83 and 84 respectively for this last point about information around maps, evacuation routes and information about KI pills. So on that note, high level of interest, low level of concern.

I am going to pass it off now.

MS PULST: Is it this one?

MR. SECCASPINA: Yes.

MS. PULST: Having reviewed the CMDs, I came to an overall conclusion that my job is to tell you something from the ground that you may not otherwise know.

As we heard, OPG has invested millions in mitigation. Provincial and regional plans must also keep pace. Preparedness is being knowledgeable before an accident, not just waiting for real-time instructions dependent on the power grid.

Four major components of protective

measures are KI distribution, evacuation, reception centres and understanding sheltering.

Apart from this annual permission form -- well, it's down here -- I receive as a parent with school children, I have never in nine years received any information from the school on what their evacuation procedures are, that there are temporary holding schools and where they are and when and what sheltering is. I live at the edge of a 3K zone.

While the Emergency Unified Response Drill of 2014 was elaborate, I am not aware that schools and school bus drivers were a part of this. There were no evacuation drills.

In fact, in talking with the school bus driver, they could not remember ever having training and procedures around evacuating children during a nuclear accident. They need assurances as well that their health is considered when ferrying our children from a primary zone to safety.

Oh, this is irrelevant.

Traffic. People get nervous when three regional roads that exit a community are simultaneously down to a single lane due to construction. Are traffic and transportation concerns being monitored, measured and are plans being audited with nuclear in mind?

I will skip those as well.

The PNERP and DNERP are prepared only for a basic offsite effect, not a Fukushima-scale accident, from my understanding. As the poll found, people want to know where the centres are and what the reliable sources of information are. It is disconcerting that people in Darlington primary zone are not making family emergency plans.

Mailouts and meetings and school messaging are important to personal preparedness. If, as Durham's Director of Emergency Preparedness says, personal preparedness is up to us, then you need to make sure that we have the information and tools to prepare.

Thank you.

MS McNEILL: You have just heard that 86 percent of the Durham residents living in the 10K Darlington zone who were polled are asking for planning for a Fukushima-scale accident. As mentioned in our written submission, DNA endorses the recommendations you received from the Canadian Environmental Law Association and ask you to deny the life extension licence and restrict licensing to one year until OPG is in compliance with REGDOC-2.10.1 and various other emergency planning measures have been dealt with.

Commissioner Harvey asked yesterday what

the benefit of assessing a Level 7 INES release would be. Our polling has indicated a very high level of concern for nuclear emergency plans to be in place for a Fukushima-scale accident, 86 percent. Addressing this would address the concerns and expectations of the host community in the area around the Darlington Plant. Residents feel it is an unreasonable risk not to be so protected, so we call on you as tribunal members responsible for public safety to address this finding.

That's it and I would just like to say thank you again for the funding that allowed us to do this polling.

THE PRESIDENT: Thank you.

Questions? Dr. Barriault?

MEMBER BARRIAULT: Thank you, Mr. Chairman.

This is fascinating stuff, by the way. Congratulations. Where do you go with this information now? What is the next step?

MS PULST: Where do you think would be good? We have already just today and several weeks ago, just a short snippet to the Durham Region, but I think it would be also good if the province could understand this and look at it closely.

MEMBER BARRIAULT: Have you discussed it

with Emergency Planning or anything? Have you discussed this --

MS PULST: We have told them we had it but we have not had any response.

MEMBER BARRIAULT: OPG, do you have any suggestions as to what can be done with this information?

MR. DUNCAN: Yes. Brian Duncan for the record.

You know, surveys like this, well, they are fascinating because, as you know, we do a lot to get the message out. We do other surveys to see is that message penetrating.

And it's interesting where you have a majority of people that are concerned, as the poll says, and yet a majority of them haven't really done much to prepare themselves. So that is the dichotomy of messaging and that is the challenge we face, all of us face living in this community, is getting the message out, being effective with that message and having people act upon it.

You know, I will note the survey was taken before the KI pill distribution as part of the new REGDOC and with that distribution went a lot more information out to folks. It would be interesting to take this as a baseline, if you will, and then measure to see what has happened since that to see what the effectiveness was.

I will call upon my colleague Kevin Powers to talk a little bit about the challenges we face with the communications protocols and working with the Region on getting that message out effectively.

MR. POWERS: Kevin Powers for the record.

Because of our communications efforts around emergency preparedness, we have tried to understand the communications challenges and the most effective tactics around emergency preparedness communications. We are not alone in looking at this. In fact, risk communications is an important branch of public health.

What we see here in this study and in other studies that we have done and that have been conducted around North America are similar trends. And if I could pinpoint one of those, the main trend is that most people in North America are underprepared in the event of an emergency in the United States and Canada.

There is the National Centre for Disaster Preparedness out of Columbia University and it has what's called a Public Readiness Index. The United States has an average of 3.31 out of 10 in its disaster readiness.

The California Office of Emergency Management has conducted similar polls to find out the readiness of residents of California. There, fewer than 20 percent of homes have prepared for an earthquake. Fewer

than 40 percent of homes have enough water to make it for three days in the event of an earthquake.

Now, this isn't isolated to America. We have similar results here in Canada. We have done a literature review of some of the polling that has been done since 2005 around emergency preparedness and seen similar trends.

An Ipsos Reid poll from 2012 looked at disaster and emergency preparedness readiness across Canada, including areas that are more prone to natural disasters. The results there are kind of interesting. They found that although the majority of Canadians that they polled had experienced one form of natural disaster or another, 66 percent of those people had still not prepared for another event.

Now, these numbers are discouraging but we're not going to throw our hands up here. As Brian mentioned, we have recently done the KI pill distribution which went some way towards addressing this but there is not going to be a single bullet here to address this and we plan over the coming months and coming years to work with the Region of Durham and with the City of Toronto on effective emergency preparedness communications to help bring up the levels, the low levels that we see here and are seeing across North America.

MEMBER BARRIAULT: Thank you. Thank you.

MEMBER TOLGYESI: Quite a short one. This is mainly to Ontario Emergency. You are sitting there.

Do you have a public outreach program to inform the public on the family emergency plans or you don't do that right now and who should do that?

--- Pause

MR. KONTRA: Tom Kontra, for the record. Thank you, Mr. Tolgyesi, for that question.

I would like to reiterate some of the points made by Kevin moments ago and that particularly this is an ongoing issue for us and it's not a one-shot effort and it's one that, as indicated, since that particular survey has been bolstered by concrete action on the part of the region, the operator and the province.

The public outreach, the public education outreach is coordinated through regional public education committees which are made up by folks from the province, from the municipalities and from the operators. We do that in all the regions; Bruce, Amherstburg Nuclear Laboratories, Chalk River as well as Durham Region and OPG. And this team continually struggles with what is the most effective approach.

As you will recall, a year or so ago OPG provided a great deal of support to Durham Region with a

flashlight-shaped information package. So we try different methods and we continue to work together and we will continue in the future to do that to bolster the program.

We have already looked at how do we maintain the awareness we are trying to build for KI in the future? With that, of course we take these opportunities to listen to the intervenors and to try and inject some of their observations to a more successful program in the future.

THE PRESIDENT: But you are developing a province-wide plan, but then you oversee that the Region of Durham will develop a little bit more detail for that particular region. Did I get it right?

MR. KONTRA: Absolutely. And I wouldn't want to speak for Durham or Amherstburg or anybody else, but they do their own.

In the particular case of Durham, Durham and the OPG are working hand in hand to actually customize the information being provided in Durham.

THE PRESIDENT: So I think, the intervenor on page 9, there is a nice set of 12 questions that you would expect a household to have at their fingertips. And I think that would be not a bad start to make sure that every household has that. As somebody in the U.S. explained to me, while the Americans are very ready for

hurricanes because it has happened often, now we cannot learn because we don't have enough nuclear accidents to actually be ready, thank god.

But the point here is if you want people who have high interest but low concern that's a real issue. How do you -- even if you send a brochure how do you maintain their interest and refresh it is a big challenge. But at least you should have the basic kind of what do I do in case of an accident?

MR. KONTRA: Well, I think based on what we have done we have provided more than the basic information and we've made it available. Unfortunately the government, as stated in times past, has no basis in the bedrooms or living rooms of residents. We are unable to go there and hold their hands to the document.

We have to rely on things like the survey that was quoted, like the survey that Kevin spoke of, like the survey we spoke to you about in the preliminary workings of the KI working group. They all assist us in adding new questions and new answers to what we try to provide to the public.

THE PRESIDENT: So I think the suggestion was you take it to the Durham Emergency Planning this oral presentation and see how they would react to that.

MS McNEILL: There are so many things I

want to say I'm not sure where to begin. Could I dive in?

On that we do engage with the Durham Nuclear Health Committee all the time. We have been attending those meetings for several years. So DEMO is very -- DEMO, Durham Emergency Management Office, is very well aware of our concerns.

Mr. Kontra as I -- I'm going to probably go all over the place for which I apologize in advance, but we think that our responsibility is at all levels. We think the CNSC has responsibilities. We are aware of the severe accident study and that it wasn't really a severe accident study and we would like CNSC staff to be dealing with a Fukushima-level emergency situation.

But the responsibilities are all over the place. OPG has responsibilities. OPG can make use of the polling results we just produced. You can look at them and see what people are asking for in terms of where they would like to get their information.

I want to say to the province, because Durham Nuclear Awareness has been consulting with everybody that we can think of in the last several years; we talk to the CNSC; we go to Durham Nuclear Health Committee meetings; we have approached the Minister of Community Safety and Correctional Services and asked to be the -- well, we were told we would be at the table. We were told

there would be public consultation about the new Provincial Nuclear Emergency Response Plan but the doors have been closed. The doors have been very firmly closed.

And I want to say too that we talk to local politicians all the time, Durham regional politicians. You wouldn't believe how much people don't know about nuclear emergency planning. It's like we said in the submission. They don't know anything. And it's not just that they don't know anything but that the plans do not exist. The plans are not there.

So if you live within range of -- you know, say you live 5 kilometres from the Darlington plant, you don't know where evacuation centres are; you don't know how to decontaminate if an accident happens. Nobody knows any of that stuff. And if a serious accident happens I have heard people say, you know, "Consult the internet" or something like that. Sure, power is done. How are you going to do some of these things?

People need to know ahead of time. And we know from people in the United States where they have hurricanes and so on, preparations can be made ahead of time. People can be told ahead of time where evacuation centres are, where they are supposed to go.

And if there is a serious accident there is not much point in having your evacuation centre within

the 10K zone, is there, because if it's a serious accident and the plume is going beyond the 10K you'd better have -- you'd better have backup. But these plans have not been made.

This group -- and I can't take credit for this. I have only been involved in this group since 2012, but this group has been advocating for proper nuclear emergency planning since after the Chernobyl accident. So we keep talking and talking and talking about these things, but nobody seems to be listening. But we'll keep talking about it.

We were just at the region this morning. We were speaking to Durham Regional Council this morning about pressuring the province because we feel the province is part of the problem.

I sort of have the feeling that everybody has got a piece of the problem here.

THE PRESIDENT: So where do -- you say a plan here now in 2016 and there has been a commitment to consult and bring it on, so maybe we'll get some action here too. Because from our perspective I think we agree that there needs to be a plan.

MS McNEILL: Well, and the public needs to be able to be at the table. We were assured that we -- we were assured by the province that the public would be

consulted.

Ms Velshi said at the Bruce hearing -- I was sitting at home watching the webcast of the Bruce hearing, and Ms Velshi said -- she advised OFMEM, "Get these stakeholders involved sooner rather than later".

We have sitting in this room the person who probably knows more about nuclear emergency planning than anybody else in Ontario. She's sitting in this room. She's been working on this stuff for years. She was thanked three times at the Bruce hearing. Everybody knows Ms McClenaghan knows a tonne of stuff about nuclear emergency planning. She knows where the gaps and deficiencies are. And we've all been talking about this stuff and sharing this information for years. So we would really like to see something happen on this.

THE PRESIDENT: Okay. Who else wants to -- any other questions from -- Mr. Tolgyesi?

MEMBER TOLGYESI: Yeah, one.

Do you think that if you will participate in kind of public info meetings about these things it will help, it will attract much more interest? Because the question is that, you know, you distribute the papers or publications, but to some extent is people reading that; to some extent not?

Now, another way is to organize kind of

public sessions where -- but the question is how to attract the people to participate there and what are conditions that they will come?

MS PULST: Can I respond with an example?

MS McNEILL: Are you asking us as a small non-governmental organization with very limited resources to do that or are you asking the province to do that?

MEMBER TOLGYESI: I don't ask you organize that, but you will participate if it's organized?

MS McNEILL: We have been offering to participate for years. That's what I'm saying and the province said they would consult the public and it's gone on behind closed doors.

We know there needs to be a change in the planning basis. This has been said for some time. So the province can consult with the public in 2016 but they have already decided on the planning basis. They made that clear at the Bruce hearing that the planning basis was not up for debate.

So without changing the planning basis we are not going to get the proper nuclear emergency plans.

THE PRESIDENT: Okay.

MS McNEILL: It's like there's an elephant in the room. It's like nuclear emergency planning is a bit of an elephant in the room. Nobody really wants to talk

about it. Everybody just kind of really doesn't want to think about it and doesn't want to talk about it. But we think we should talk about it.

THE PRESIDENT: I think we'll talk about it. And so -- I think we spent now three days talking about it.

MR. DUNCAN: So if I could?

THE PRESIDENT: By all means.

MR. DUNCAN: Brian Duncan, for the record.

One of the Commissioners asked you know, what would OPG do with page 9 of the presentation for example? We are going to take this polling information. There is some good stuff here. You know, and if I look at page 9, how do you engage the community: Information in the mail, public meeting, the media, television, newspaper, websites, visits; tours. We did all of those things. We do all of those things.

But there are some other elements there and I'll let Mr. Powers speak to it again.

MR. POWERS: Kevin Powers, for the record.

As I mentioned and as the poll shows, there is no single magic bullet for this. But over the past number of years we have been working on all of these, all of these channels, through all of these channels in order to try and engage the public on emergency

preparedness.

I can go down through this as Brian did and check off each one for information in the mail. We, two years ago, sent out the flashlight brochure which has had a fairly good retention for a mail-out. We have done the same with the KI pills.

We have held public meetings just in the past few weeks around KI pills and emergency preparedness. And while I would like to say that, you know, engaging with the public is a good way to go, we have had very poor attendance at these despite extensive advertising and despite having, you know, a very robust communications plan around it.

In terms of media, we have met with media, social media. We are advertising in newspapers. And so we do try as many of these tactics to try and engage the public.

But as we've learned from the -- from some of our reading on this subject, it's the perception of -- perception of risk plays one of the most prominent roles in whether or not people are going to prepare for an emergency and we see that most vividly displayed right before snowstorms when everyone goes to Canadian Tire and gets shovels and salt, et cetera.

With nuclear emergency preparedness the

risk perception is fairly low and, as a result, people -- people respond accordingly.

THE PRESIDENT: Ms Velshi...?

MEMBER VELSHI: So I'll have another go at this involvement of stakeholders in the planning basis. You weren't here this morning. We did have another go at it. I did not leave that conversation very satisfied that it was going to go the way I thought it should go.

So I know there are many of us who believe that key stakeholders, meaning folks from the public who have knowledge and keen interest, be involved earlier rather than later. We were told by folks from the province that they have their own protocol that may constrain them in doing it. But as the President offered that the Commission, the CNSC has a process for engaging the public.

So maybe I will turn to staff and see, because staff is involved in this. How do we make sure that the planning basis gets appropriate input from the public earlier rather than later? What are the mechanisms we have that would facilitate that?

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

You are asking a very valid question and it's a very important question. We heard a lot of discussions this morning with respect to the CELA

presentation and the engagement of stakeholders. From staff's perspective we are fully ready and we would like to use the CNSC transparent process with respect to the engagement of the stakeholders.

As the President mentioned this morning, our requirement is very, very clear to OPG and our requirement is very clear with respect to OPG's capacity in order to have the planning basis onsite and offsite.

Having said that, we have the annual report, Regulatory Oversight Annual Report for Nuclear Power Plants, and we will be dedicating a section in that report for the planning basis for emergency preparedness and response. This way the public is allowed -- through the public proceedings of the Commission, the public is allowed to intervene and the intervention of the public will provide clarity on the progress associated with the planning basis.

As we heard this morning, there is an advisory committee meeting coming up. CNSC staff will be engaging with the Office of the Fire Marshal and Emergency Preparedness, Ontario. So does -- the utilities will be engaged. And collectively we will look at the revision and the update of the planning basis for the emergency preparedness.

Through that process I believe, as the

Chief Regulatory Operations Officer of the CNSC, there will be public input through the annual reporting.

And as we progress with respect to the planning basis and the updates, and I have got to put the emphasis on the updates because currently there is a provincial plan that OPG is compliant with and the CNSC is satisfied with the existing one, but we need to enhance with respect to what we heard today and the fifth level of defence in-depth that I am glad everybody now is talking about because that's a very technical term arising from the IEA.

So in conclusion, we will use the public proceedings of the CNSC in order to allow interventions and update you, the Commission, with respect to the progress of this planning basis. And at some point we will evaluate and if there is a need to have a special session we will come forth with a special session according to the direction from the Commission. As you give us direction for the sub-studies we are willing to fulfil your direction.

MEMBER VELSHI: Thank you, Mr. Jammal. That's actually very reassuring to hear. And if you feel the timing doesn't line up with the annual oversight report which is August and this may be earlier in the year then there is, of course, flexibility of bringing that up. And

if you feel that oral submissions from the public would be helpful then we can also make that happen.

THE PRESIDENT: On this positive note, you have the final thought here. And by the way, I really enjoyed the survey, so thank you for that. It was very interesting to read that.

MS McNEILL: Well, we're grateful for the funding for that.

Final words: I want to say quickly that KI is just an adjunct to an emergency plan that's not an emergency plan. So if OPG has meetings about KI that's not necessarily going to attract people who are concerned about a lot of other different things to do with emergency plans. You know, decontamination and evacuation centres and so on.

But I guess what I really want to say, the final word I want to say is communicate, communicate, communicate. I actually created this whole list of quotes from the nuclear industry about the need for good communications about nuclear emergency plans. I know it's not protocol for me to walk along and give you each a copy but I would love to do that because I made enough copies for you each to have one. I'd like OFMEM to have copies as well.

Lots of quotes, especially in the severe accident, the hypothetical severe accident study; lots of

great quotes about communications and so I will just quote one of them:

"Dissemination of information on raising awareness regarding emergency planning through various means by those organizations with emergency planning responsibilities is done on an ongoing basis. In the event of an actual incident, effective coordinated communication amongst responsible organizations is essential before, during and after the actual incident." (As read)

So I just want to say communicate, communicate, communicate. Even the industry, the IAEA, the ICRP, everybody is saying people need to know ahead of time. We need to communicate.

So I think -- I think the phrase is we want to see the talk walked. People have to walk the talk if we are going to communicate, communicate, communicate let's go.

THE PRESIDENT: Thank you.

MR. LEBLANC: Please, Madam McNeil, just leave them with Louise at the Secretariat and she'll ensure we get them. Thank you.

THE PRESIDENT: Okay, thank you.

I would like to move on.

MR. LEBLANC: If I may, Mr. President, while Ms Butler is invited to join us, I think OPG wanted to provide numbers on the EFPH for the four units that you had committed to providing earlier today.

I forgot to give you the floor earlier.

MR. DUNCAN: Brian Duncan, for the record. Thank you for the opportunity.

So I have the detailed breakdown but, in essence, Unit 2 has the highest number of hours of course at 180,000 and it ranges down to Unit 4 at about 171,000 today. Well, technically this was taken just before my VBO. I have a few days running since that outage was over, but close enough. Oh, yeah.

***CMD 15-H8.148**

Oral presentation by Evelyn Butler

THE PRESIDENT: Okay. So the next submission is an oral presentation by Ms Butler, as outlined in CMD 15-H8.148.

Ms Butler, over to you.

MS BUTLER: Good afternoon. My name is Evelyn Butler.

I am just going to say before I start the data that I will refer to is from this report that my whole team had from the 2012 hearing, so just letting you know.

I'm here today on behalf of the new team that I am in fact building from my old one which is now called the Toronto Youth Young Generation Nuclear Association, a bit of a mouthful. Sorry.

Before I begin I am going to thank all, the CNSC for having me here today. It's an honour.

Over the years, both before and after the three disasters at Chernobyl, Fukushima and Three Mile Island, Ontario's millions of young citizens have remained largely ill-informed on the topic of nuclear power and the potential dangers that it poses to their long-term health and livelihoods if our reactors are allowed to be rebuilt.

My group would maintain that is the joint responsibility of plant operators and CNSC to close that information gap that is lacking.

Toronto itself is at a mere 60 kilometres from Darlington, and would be impacted should a large scale radioactive release take place at this facility. I would suggest that nuclear operators and each of you as regulators should encourage youth to join environmental or health-related community groups so they have a higher chance of being made aware of local community meetings and

hearings such as this one.

I would ask that the CNSC make targeted efforts to communicate with you, as I don't feel your current methods of informing the public of hearings like this one are likely to reach younger populations.

The CNSC needs to have a strong enough presence on social media to alert youth about the public opportunities that they have access to.

Contrary to the popular belief, youth do actually enjoy being involved in things like this, and expressly improving nuclear emergency plans would certainly be an excellent chance and would go a long way in them feeling more secure in the importance of their energy futures. It would also be the perfect way to enable to get through to them and give them each a KI pill, which so far has only been done for anyone -- or has not been done, sorry, for anyone outside of a 10-kilometre radius of the Darlington facility.

There seems to be a notion that because it's mostly the Durham Region that would be most adversely affected in the scenario of an accident that the voices of young people outside of the immediate area, in Toronto especially, aren't as important to be heard and that production is not as important to give to them, but still, we stand to be seriously impacted in the event of an

accident at Darlington, and their taxes and electricity bills will still be the ones paying for any reactor rebuilds and costly overruns likely to result from any of these things, so you should definitely have a stronger voice.

In 2012, we released a survey which is in this report and subsequently held several focus groups which were seeking to better understand how Toronto's youth feel about nuclear power, and we found that the target audience that we had reached out to had, in general, a poor understanding of what was involved in the production of nuclear power and other things.

We also discovered that they had mixed feelings about the use of this technology, and overwhelmingly preferred to develop renewable energy as an alternative for the future.

The numbers who did not know about the refurbishment from 2012 and, I'm guessing this one as well, were far too high and the CNSC have to certainly seek more efforts to get youth input instead of leaving it to others when they should be taking their own initiative.

Going back with the survey, younger generations again agree that it is time to bring in new forms of energy which are safer for the environment. And although several of them are not sufficiently aware of the

economic and technological complexities to comment intelligently on the subject, this is not a reason to keep them out of discussions.

This is an indication that more education and inclusion is needed.

If you disagree that our youths' opinions that we should begin to transition to renewable power, then -- instead of imposing nuclear power upon them, it is mostly your moral responsibility to convince them of why nuclear power is still a good option. And if you exclude the voices, then you tend to send a message that they don't really deserve your respect on the matter and that their voices are not important within their own areas.

If given the right tools for groups such as this one and the Durham Nuclear Awareness, we could be using places for where to hold meetings, research and other such things where we can grow with the help of financial assistance, among other things, from environmental organizations such as yourselves and my newly forming team itself could try to improve meaningful youth involvement in the decision-making processes into future years.

It's time to take younger people into the picture instead of relying on adults and educate them in a way that makes sense for them to be able to understand for people their age on such things as the science and math

behind the energy industry that relates to nuclear power. That way, they have a better understanding of the resulting environmental impacts that lead to waste and other fall-outs.

But all this, unfortunately, can only begin with mutual cooperation on all sides. This would give our youth a chance to consult and consent informedly when it comes to questioning such things as the industry risk assessments, but in order to get there, they do need the training to be able to understand it from the get-go, so more hands-on ways are better than trying to rely on other people and getting them to just go through the educational school system to learn about all that.

Making the general public more aware of hearings such as this one is definitely a step in the right direction, especially when it comes to accountability and transparency, but we definitely need more inclusive ways forward which the CNSC could definitely do with things such as what I have started doing myself, which is reaching out personally to local schools in the areas and challenge youth to write to you in their own words from their understanding, expressing their thoughts on the future of environmental waste and the refurbishments of these plants.

When I was doing my own research on the three previous accidents that have occurred, I wasn't

entirely surprised that I didn't understand a whole lot of the case specifics. A lot of wording, a lot of terms I didn't understand. So if someone like me who, even though I've had lots of training over the past few years when I first started on this back in 2012 is having still a hard time understanding, we need to really look at the bigger picture with the fact that young people outside of me are definitely going to have an equally hard time to understand the things involved with this.

And certainly they need to have better understanding of the core issues around using nuclear power.

We definitely have to take into consideration that we don't tend to think about the bigger picture, and we need to know that you all are aware that we need to think of the acceptable level of risk that we are going to be taking on down the road and that we are not going to be able to, on our own, deal with all the waste that continues to pile up over the years with regards to these power plants still being in existence.

So without an approved and effective plan for dealing with numerous tonnes of radioactive waste Darlington will produce over the next decades if it is, indeed, refurbished, how can you logically deem rebuilding these reactors to be an acceptable risk overall?

There is no safety net, no real solid emergency plan to hold onto. Ontario's plans pre-date Chernobyl, and your current requirements for the KI pills to be distributed within only a 10-kilometre radius of the plan is based on no peer-reviewed scientific literature that can be located.

Furthermore, I find it extremely disturbing that both OPG and CNSC staff themselves appear so adverse to releasing a study into the effects of a Fukushima-scale accident at Darlington. Why was the model accident to the promised study into this possibility downgraded to one of lesser seriousness?

Would the results have been troublesome for the industry overall? And most importantly, is this really a morally acceptable basis for CNSC staff to order such an alteration to the study?

This industry seems to have forgotten that Canada, as a country, does have a lot of stakes that everyone has a right to life, yet the longer we stall, the longer we put our own lives at risk if we don't do anything.

I personally would like to be directly and clearly told what Ontario's emergency plan currently is and be assured that my interests and safety are being taken seriously.

My new team's previous survey from 2012 showed data results that 74 percent of youth that we reached out to were uninformed on the plant's refurbishment. Therefore, among our asks are that we recommend that that figure be brought down to a minimum of 50 percent overall in the following five to 10 years, aiming for 2025.

We also recommend that local focus groups be held and organized in each major city from Clarington all the way to Toronto and other surrounding regions in each direction within at least 50 kilometres from the plant's location.

These focus groups should definitely try to have a mixture of age ranges, so adults, too, but mostly youth, and they can be used for ideas for strategy options for our provincial emergency plan if the refurbishment is, indeed, approved, debate the pros and cons to refurbishments and perhaps work out all possible scenarios to map out as many predictions and models as possible with the help of theory and probability to give to others in the industry.

But we would not need any of this if we do try and move as quickly as possible to renewable energy instead of spending countless hours in rooms such as these to debate over something that we're never fully going to be

able to have control over.

We recommend as well that mock youth hearings be held to prepare them for ones such as this one if they see fit to attend.

My new team would also lastly recommend that if the CNSC chooses, counter to logic evidence, that its obligation to the public to grant this licence, that the standard licensing length for these and all reactors remain at no longer than five years, at best, instead of the new and highly-contested 13-year term in order to ensure more frequent responsibility checks and routine safety upgrades.

When considering just how much we're leaving up to chance by ignoring the growing trend of catastrophic events resulting largely from climate change patterns, as we've seen lately, more fires, tornadoes, rain storms and so on, I fear that my generation will be left to suffer from our elders' mistakes.

MR. LEBLANC: Madame Butler, are you concluding now because we're past the 10 minutes.

MS BUTLER: Oh, I'm sorry. Yes.

MR. LEBLANC: Thank you.

Please just -- were you completed? Thank you.

MS BUTLER: I was going to wrap up anyway,

so thank you.

THE PRESIDENT: Okay. Thank you for your submissions.

Questions?

Dr. McDill?

MEMBER MCDILL: I believe that CNSC is on Facebook. Have you friended them?

MS BUTLER: I have noticed that there is some reach out with Facebook and Twitter as well, I believe, recently.

THE PRESIDENT: Facebook, YouTube, you name it. Any social -- Twitter. We're on there.

MS BUTLER: Yeah.

THE PRESIDENT: I'm surprised you don't know that.

MS BUTLER: No, I was aware --

THE PRESIDENT: We're also in school. Did you look to check the school presentation on Nuclear 101?

MS BUTLER: I was unaware of that, no.

THE PRESIDENT: You should visit.

MS BUTLER: I will certainly do that.

MEMBER MCDILL: If you don't know that we're there or if youth in general don't -- anybody isn't aware that CNSC is on Facebook, then they don't know to go look for it, so it's a bit of a challenge to reach out,

so --

MS BUTLER: For sure. I think it's something that --

MEMBER MCDILL: Somebody needs to follow them so that --

MS BUTLER: Yeah.

MEMBER MCDILL: -- other people will follow them and friend.

MS BUTLER: For sure. I think it's -- there are, I think, small groups of people that are a bit more aware of -- especially some local high schools have eco groups that are kind of involved in this sort of work, so they'd be the ones that have a bit more reach for this. But in general, still, those numbers do need to grow because, in general, from my years of doing this now, you know, any talk about this with young people, they're kind of stumped as to what you're talking about.

THE PRESIDENT: But you know, I really don't buy into this. Climate change is such a topic now where all of these are being discussed, and any kid who's interested in this should get engaged and find out all the debate about the various technologies, competing technologies. And it's a very hot topic now.

So they don't have the motivation, you're not going to be able to get them to -- actually interested.

But I think the public in large is interested in this subject now and, in fact, we're going to see this in Paris in a few weeks at the international debate about climate change.

Anybody else?

Okay. Thank you for your intervention.

MR. LEBLANC: So Mr. President, if I may just propose the path forward, I think we should take a 15-minute break at this juncture, but before this, I'd like to mention that we are a bit in advance in terms of our planning.

THE PRESIDENT: Don't say that.

MR. LEBLANC: I know. It never happens, so pinch me. But the next speaker would be Ms Speakman. I don't know if she's in the room.

And so -- and we -- and then we would have -- technically, we'd go after dinner for people that had planned to be here after 7 o'clock, but we know that we have the Power Workers' Union has already offered to present before dinner, and Louise is working like crazy to try to get some people earlier.

Also, at 4:15 you'll recall that this morning there was this paper from the Australian Radiation Protection Nuclear Safety Agency, and they've offered to be online if there were any questions from the Commission

Members, so we will link with them at 4:15 and then we'll proceed with other interventions.

So it will be good for that 15 minutes to -- for everybody to read the two pages.

THE PRESIDENT: Yeah, we have to read it.

MR. LEBLANC: Yes. So we'll resume at five past 4:00.

--- Upon recessing at 3:51 p.m. /
Suspension à 15 h 51

--- Upon resuming at 4:12 p.m. /
Reprise à 16 h 12

MR. LEBLANC: The next submission was to be an oral presentation by Ms Geneva Speakman. She has just informed us that she wanted us to consider her submission as a written only, so this takes us to the Power Workers' Union, who have -- who were scheduled to present this evening, so they'll be a few tabs further on your -- in your binders, and we appreciate it.

The President will formally introduce you.

THE PRESIDENT: Let's do Speakman first.

MR. LEBLANC: Oh, yeah, let's do Speakman, yes.

Any questions from Members on Ms

Speakman's intervention?

THE PRESIDENT: No questions.

MR. LEBLANC: Which is CMD 15-H8.84.

THE PRESIDENT: Okay. Thank you.

So where are those guys now?

Found you guys.

So the next submission is an oral presentation by the Power Workers' Union as outlined in CMD 15-H8.11 and 8.11A.

I understand that Mr. Clunis and Mr. Trumble will make the presentation. Over to you.

***CMD 15-H8.11/15-H8.11A**

Oral presentation by Power Workers' Union

MR. CLUNIS: Thank you.

Good afternoon, Mr. President and Members of the Commission. My name is Andrew Clunis. I'm an emergency response maintainer at Darlington, a chief steward with the Power Workers' Union and the Darlington sector representative.

I represent our members at Darlington on the Power Workers' Union Executive Board.

With me today is Mr. Dave Trumble. He is the Power Workers' Union health and safety staff officer.

Our sector Vice-President, Bob Walker, hoped to be here for the hearing, but he's required at our national unions conference this week.

We will highlight the following topics which are detailed in our written submission. The Power Workers' Union, who we are. Power Workers' Union involvement in the regulatory process. Refurbishment. Worker training, health and safety, effective relationships, and a conclusion.

The Power Workers' Union has represented the majority of skilled workers in Ontario's electric generation, transmission and distribution systems for 70 years. We represent the workers that operate and maintain the Darlington generating station, as well as all of Ontario's nuclear power plants, and have done so since their construction.

The Power Workers' Union is affiliated with other labour organizations such as our parent union, CUPE National, the Ontario Federation of Labour, the Canadian Labour Congress and the Industrial Global Union.

The Power Workers' Union is also a member of the Canadian Nuclear Workers' Council, the International Nuclear Worker Union Network, as well as several labour councils across Ontario, including the Durham Region Labour Council.

Our knowledge, experience and history qualify us as a vital and credible voice in public nuclear discussions, and specifically to these hearings.

Our union has a long history of involvement in the nuclear regulatory process and many other forums. We have been involved with a number of hearings, including power reactor operator licence renewal hearings.

Strong regulatory oversight and public scrutiny are good for worker health and safety, and are good for public safety. Processes like this public hearing are a valuable tool in ensuring the best interests of the public are assessed and acted upon appropriately.

We have heard criticism that, as workers in the nuclear industry, our motivation is strictly out of self-interest, not in the interest of public or environmental safety. Nothing could be further from the truth.

We believe that it is our responsibility and obligation to bring forward the views and experience of the people who perform the day-to-day work in our nuclear facilities. If there is a risk to public or environmental safety, it is a risk to our workers on the site first.

We also live in the community with our families. We will not do anything to harm the safety of

our community.

The views of the workers, we suggest, are very important in assuring the public that our nuclear facilities are, in fact, the most highly-regulated industrial workplaces in Canada, and the safety record is exemplary.

Senior representatives of OPG and the Power Workers' Union have been meeting on a quarterly basis to review the status of the Darlington refurbishment project. The project is also discussed at the Darlington Joint Union Management meetings.

Discussions include safety-related topics just as joint health and safety committee coverage and work protection. We look forward to continuing this open and transparent dialogue.

Workers are trained and practised in their core functions and their ability to respond to change. Post-Fukushima improvements include updated procedures, new equipment, training and practice.

Now I will turn it over to my colleague, health and safety staff officer Dave Trumble.

MR. TRUMBLE: Thanks, Andrew. Dave Trumble, for the record.

There is an obvious convergence of safety interests between the industry's employees, the general

public and the environment. The PWU believes that uncompromising approaches to worker health and safety sets the table for public and environmental safety.

This is why we feel it is appropriate in these submissions to consider nuclear safety from the workers' perspective.

Over the years, we have worked with OPG to create mechanisms and forums to improve workplace safety and address issues. There are a number of legislative requirements for health and safety in the workplace. We have negotiated additional rights for health and safety in our collective agreement.

Health and safety should always start with the internal responsibility system. We strongly encourage that.

There are several ways for our members to address any questions or concerns that they may have regarding operational safety. Listed are a few.

Direct communications with supervisors, filing station condition reports, access to joint health safety committee members, stewards and chief stewards, the right to refuse unsafe work, the right to shut down unsafe work. And we are encouraged to report even minor incidents or potential incidents so that we can learn from them.

PWU representatives participate fully on a

number of local and corporate-level committees that you can see listed on the slide. We have a very active joint health safety committee at Darlington, and the PWU has negotiated agreements that all of our joint health safety committees will receive certification training.

In addition to that, the PWU has invested our members' money in a health and safety training module for stewards and a three-level health and safety accreditation training program for joint health safety committee members and chief stewards.

We have also negotiated a number of other health and safety-related agreements. We don't just negotiate for wages and benefits; we negotiate for the best possible safety standards.

Our written submission outlines the legal and negotiated forums that are currently in place. This is a mature relationship, and we are continuously looking to improve our joint approach to health and safety.

When OPG and the PWU work together with common purpose, we get results.

We share all of this with our brothers and sisters nationally and internationally through the CNWC and INWAN.

As I said before, we believe that if workers are safe in the workplace, then the community and

the public are also safe.

And I'll ask Andrew to continue with our presentation.

MR. CLUNIS: Thank you, Dave. Andrew Clunis, for the record.

The effective and successful labour relations between Ontario Power Generation and the Power Workers' Union has been the track record since the Ontario Power Generation's inception, and Ontario Hydro prior to that. The parties have developed unique processes to resolve issues. This is a mature relationship.

The local community has been very supportive of OPG and Darlington. Continuous dialogue with the workplace parties as well as public leaders at the community, provincial and federal levels have proven successful, and we have every reason to believe this dialogue will continue to be as open and thoughtful into the future.

The Ontario Power Generation has proven to be a very good corporate citizen.

The economic benefits to the region are great. There are thousands of highly-skilled, good-paying jobs for the continued operation and maintenance at Darlington. There will be many more jobs throughout the refurbishment project.

We in the Power Workers' Union base our support for the renewal of the Darlington operating licence on the history of good operations of the Darlington units and all of the nuclear plants in Ontario. They have operated safely for decades.

This is an excellent technology that has continuously improved without causing any significant detrimental effects to workers, the public or the environment.

Darlington will continue to minimize our reliance on greenhouse gas-emitting fossil fuels to generate electricity. Safe, clean, reliable, affordable CO2-emission free electricity.

The Ontario Power Generation requested a 13-year operating licence, and CNSC staff recommended a 10-year operating licence. In our written submission, we supported CNSC staff's recommendation, but we don't have a concern with OPG's request.

The CNSC annual report on the operation of Canada's NPPs is present in a public hearing. This gives us the opportunity to raise concerns to the CNSC. We also have our regular access to CNSC staff located at Darlington.

Darlington is owned by the people of Ontario. They can be proud of it. I know that the people

that work there are.

In conclusion, the Power Workers' Union is in full support of the Darlington licence renewal. We encourage the Commission to renew the Ontario Power Generation Darlington power reactor operator -- operating licence.

We will be pleased to answer any questions.

Respectfully submitted by the Power Workers' Union.

THE PRESIDENT: Thank you.

Questions?

No questions?

Let me ask you -- I asked a couple of other union. Are you involved at all in emergency management, emergency planning? Is it ever discussed as a union in -- in particular in the various locations of the nuclear power plants?

MR. TRUMBLE: Thank you, Mr. President.
Dave Trumble, for the record.

What I can tell you is that the various levels of involvement, right from the ground level through the joint Union/Management Committee all the way to the various corporate committees, all topics are part of the conversation.

So I can give the Commission rest assurance that those conversations are part of those meetings and conversations as well.

THE PRESIDENT: But those committees normally deal with internal, right, operations, not level 5, as people describe, outside defence?

MR. TRUMBLE: No, clearly, this is a conversation that takes place within.

THE PRESIDENT: But as a union, some people will work and live in the region. Are you not concerned about some of the issues that were raised about the emergency plan?

MR. TRUMBLE: I think I can tell you that there's never been any problem with disclosure from the employer at any level, whether it's internal or external, Mr. President.

THE PRESIDENT: Ms McDill.

MEMBER MCDILL: Thank you.

On your slide deck you say you fully support, in your written you suggest 10 years.

Could I ask why you have the difference between 10 and 13 years?

MR. TRUMBLE: Dave Trumble again, for the record.

We simply looked at what CNSC Staff had

recommended, and aligned ourselves with CNSC Staff. We had no objection whatsoever to what OPG's request was.

THE PRESIDENT: You did mention that you felt some comfort by the annual oversight report.

Do you find them useful to keep track about what's going on and raise any particular concern?

MR. TRUMBLE: Dave Trumble, for the record.

We find the annual safety assessment an extremely valuable tool and we are present at all of them. I believe you're referring to the ones in August?

THE PRESIDENT: Right.

MR. TRUMBLE: We make ourselves available, and actually quite often send a fairly large contingent to ensure that we receive as much information as possible.

THE PRESIDENT: Okay, thank you.

So thank you for the submission.

--- Pause

MR. PRESIDENT: Staff, I understand that we have our Australian friends now online.

Dr. Thompson, I think you want to set up. First of all, let me check the technology. Can you hear us? Dr. Solomon, can you hear us?

DR. SOLOMON: Yes, I can hear you very

clearly. I'm here.

You can hear me?

THE PRESIDENT: Yes, I can.

You have a colleague with you?

DR. SOLOMON: I am actually
(indiscernible) at the moment, so my colleague is not with me at the moment. Unless she is on another connection, then she is not present.

THE PRESIDENT: Okay, Dr. Thompson, can you set up what is it we are reviewing here?

DR. THOMPSON: So Patsy Thompson, for the record.

When we started reviewing the interventions for this hearing there was overwhelming criticism that what we consider to be a severe accident, hypothetical accident, at the Darlington nuclear station was not severe enough and did not represent a Fukushima Daiichi type of accident.

On that basis, we requested Dr. Steve Solomon and Dr. Gillian Hirth, who were, respectively, group leader and one of the contributing writers to the United Nations Scientific Committee for the Study of Atomic Radiation Effects.

So their report, the UNSCEAR report on the Fukushima accident, covered a number of aspects, including

the aspects looking at public exposures from the accident, and we requested that the, essentially, working group lead and contributing writer review the SARP report against the findings of the UNSCEAR Fukushima report and give us their appreciation of a comparison of the exposures and the significance of the impact of our assessment compared to the Fukushima assessment.

So the memo that we received overnight is their assessment of what was the most severe accident in our report, which was the 24-hour hold-up, with a one-hour release accident.

THE PRESIDENT: Dr. Solomon, I hope you heard all of this.

Would you mind giving us a little short overview of your finding and conclusions?

DR. SOLOMON: Okay, thank you.

Just for some background, my name is Stephen Solomon. I'm actually the Chief Radiation Health Scientist at ARPANSA, which is the Australian Radiation Protection and Nuclear Safety Agency in Northern Australia. I also head up the Radiation Health Services Branch, and Gillian Hirth basically is a section manager within that branch.

As was indicated, I was the group leader for the UNSCEAR study on Fukushima, and as such I am

familiar with both the methodology of the post-assessment methods and the particular results of that assessment.

I should apologize, I guess, for the lateness of the provision of the memo. I'm going to say it was done at fairly short notice, and as such I will say at the front that it is basically a comparison and is not a detailed report. But I'm happy to speak to what, I guess, the results of our assessment were.

You would be aware that the Fukushima accident was triggered by a tsunami, and triggered by, I guess, the earthquake, and then loss of power to the power station, but the significant issue was that the release event occurred over a period of the 11th of March to about the 30th of March 2011, so it was quite extended.

But for this comparison, ARPANSA looked at one particular release event that occurred on the 15th of March 2011, and the significance of this particular release event was that much of the release over the course of the accident was an out to sea event. UNSCEAR tested about half the release that was out to sea.

There's one particular event on the 15th, the afternoon, released radioactive material that moved up to the northwest from the reactor, and when one now looks at the images of ground contamination from the measurements, you will see that there's actually quite an

extended area of radioactive contamination.

So this was an event that occurred over a period of some hours and resulted in significant ground contamination and resulted in, I guess, the residents in those particular areas being evacuated at various times over, I guess, the interval subsequent to the actual accident occurring.

So the UNSCEAR's assessment assessed using atmospheric modelling results because there were very little measurements compiled in terms of the ground it assessed, the doses to the evacuees for a number of scenarios for a number of the settlements in that area, and as part of that you could actually derive projected doses for those settlements.

And so the significance of this is that here is an event that basically was a release in the afternoon. There is an estimate of a source term for that afternoon for that source term, which is based on Japanese data from a paper by Terada et al., and this was the basis for the UNSCEAR assessment.

When one looks at that particular source term and looks at the doses that are assessed, one can see that UNSCEAR assessed both the effective doses and the thyroid doses to adults, 10-year-olds, and one-year-olds, as infants.

So what ARPANSA did was we compared the projected doses from the UNSCEAR assessment with the results from the CNSC modelling for the GLR 24-01 source term. That particular source term was chosen because it, I guess, was a similar duration to the UNSCEAR event that I just spoke about, and, you know, this provides a method -- the potential of a comparison between the Canadian source term and the Fukushima result.

On the basis of that, you know, I guess we made a number of observations and we recorded it in the memo. The first observation was that the actual assessed values for the centre-line doses for the Canadian 24-01 source term was similar in value or magnitude to the UNSCEAR assessment for this particular event on the 15th of March, 2011.

So the actual doses, both the effective doses and our doses, were similar. Now the significance of that is that the actual source term for the Canadian scenario, the cesium release is about a factor of 10 lower than the estimate of releases from the event on the 15th of March and the iodine-131 release is about a factor of 4 lower in the Canadian source term than the estimate of release on the 15th of March.

That then says that, if the doses assessed are similar and the source term's lower, that would suggest

that the modelling undertaken by CNSC is relatively conservative in its actual -- in I mean the model's dose assumptions or the assumptions about the actual dose assessment itself.

And that's not surprising in that the actual Fukushima conditions were real meteorological conditions, the assessment, landscape assessment is based on modelling by the World Meteorological Organization and based on the wind fields that were assessed by the Japan Meteorological Agency. And so it represents real time and real meteorological conditions.

Whereas the Canadian model is a -- my understanding is it's a Gaussian plume model and it's basically using conservative meteorological conditions. So what it says then is that the conservative conditions lead to higher doses relative to the source term than is the actual case for the real event at Fukushima.

What does that mean overall? It tells us that notwithstanding that the Canadian source term in the 24-01 scenario is lower than the estimates of at least in Fukushima. The actual assessed doses are similar, so such the -- there's a level of conservatism in the Canadian model and the doses assessed, as I say, are not too different -- are similar to those that actually occurred in the real event on this -- on the particular day where we

can make the comparison.

Now, since an event base is used that the -- in terms of using the 24-01 as the basis for emergency planning, it is -- I think it would be on the basis of what is basically a fairly limited assessment you'd have to say.

But on the basis of that limited assessment, the modelling would appear to provide an appropriate means of assessing the doses of function or distance, which in turn can provide the -- or make a process for the application of protective measures as part of your emergency planning.

So I think, in summary, what I'm saying is that the Canadian 24-01 scenario provides doses that are similar to the UNSCEAR event I spoke of. And it's appropriate to use that particular model for your emergency planning in setting up your emergency planning zones and implementing your emergency planning arrangements.

I think that's the summary of what we've said in our memo.

Any questions --

THE PRESIDENT: Thank you. Thank you very much for this. But I think some Commissioners here may want to ask some questions.

Anybody want to start?

While they're pondering this, so let me try to summarize in layman language.

If I understand correctly, you consider the SARP study intention of duplicating a dose level that is equivalent to the one you found in Fukushima was successfully done.

And my second question is, is that a labelled severe accident?

MR. SOLOMON: Okay. So the first question really is in terms of the comparison. I mean, so we took this particular scenario and we assessed the doses with distance. And so we found that the doses with distance were similar to what was from the Canadian model.

Is the Fukushima accident a severe accident? Yes, it certainly is. It was basically classified as an INES 7, my memory was.

So, you know, we have the Fukushima accident basically resulted in three core melts, and so -- and the release of significant quantities of radioactive material into the environment. As such, you know, it is -- while it's not a severe as Chernobyl, but it obviously a very severe nuclear accident.

There are differences in the nature of the reactors, there are differences in the nature of the containment, and I guess -- my expertise is in radiation

protection, I'm not a nuclear safety expert, but I would make the observation that the -- you know, they have different reactors, and one severe nuclear accident, that is true.

What constitutes a severe accident for Fukushima and a severe accident in the context of Canadian reactors, and there'll be differences there. But certainly Fukushima was a severe accident, yes.

THE PRESIDENT: Okay, thank you.

Ms Velshi?

MEMBER VELSHI: Dr. Solomon, I was particularly happy to hear you say that the SARP study done by CNSC forms a good basis for developing our emergency plans.

But the concern that has been expressed by many many members of the public is that instead of working on the dose rates or having equivalent dose to what happened at Fukushima, that perhaps what the staff should have looked at is the amount of emissions and whatever the INES 7 definition is of a Level 7, that that's what should have been used for modelling.

But am I correct in concluding that there's so many conservative assumptions built in the CNSC modelling that it's really the end result frankly that matters, which is what's the dose rates that are going to

result and not so much as what the emission is?

MR. SOLOMON: That is correct.

I mean, I think what's important here in terms of your emergency planning is to understand what are the projected doses to particular groups around the reactor in the event of an accident?

As such, the number that is required is an assessment of either the effective doses in terms of criteria that are around for evacuation and shelter, what the thyroid dose is in the context of whether you give iodine prophylaxis.

As such, then it's the assessment of the doses to particular groups at particular times and distances which are -- will inform the magnitude of your protective action -- or on the basis of protective action, that will inform you to the size of the actual boundaries and the distances in which those protective measures need to be undertaken.

So the summary of that is the source term is important in terms of driving the model, the modeling's important in terms of getting you the doses, but it's the doses that inform the planning and preparedness arrangements for the protective measures.

MEMBER VELSHI: Thank you.

THE PRESIDENT: Anybody else? Any other?

Dr. McDill?

MEMBER MCDILL: Good morning, I think.

Could I ask if Australia has -- ARPANSA has done a similar study?

MR. SOLOMON: Okay. Australia does not have nuclear power reactors. We have a research reactor in Sydney and we receive visits by foreign nuclear-powered warships to a number of our ports. And part of that process is for the planning for those units and for the reactor in terms of the emergency preparedness arrangements.

We have our own what we call reference accident scenarios where basically a hypothetical severe accident similar to what you have here. And we do our own modelling of the releases and the assessment of doses to particular critical groups. And on the basis of that, we establish our own planning zone. And on the basis of that the local emergency plans and arrangements are based.

So Australia follows a similar process notwithstanding that we don't have power reactors. We follow a similar process in terms of our emergency planning and preparedness for I guess nuclear facilities and for accidents associated with nuclear reactors.

So the basis upon which the CNSC assessment is done is similar to a process that we

undertake. And at this point I would say that the Fukushima accident is a reality check in terms of -- and that's both in terms of comparisons you have made against your model and the comparison we would undertake in the future against our own reference accidents and unknown scenarios.

So we don't use the Fukushima results as the basis of our planning. We use our reference accidents. But it is a useful tool or is a reality check to assess whether our assessed doses are realistic in terms of what a real event would lead to.

MEMBER MCDILL: So just so I'm clear, what you are looking at then is dose?

MR. SOLOMON: What we are looking at is dose, that is correct. If you look at the processes in terms of the decision making in terms of implementing protective measures.

That is normally an optimization of protection, and the measure in terms of the international recommendations on this, the guidance from the International Atomic Energy Agency, from the ICRP, is that one uses measures to inform I guess the level of risk and to individuals to start to make a decision about protective measures.

And that particular measure at the first

level is typically a dose number. And that dose is either an effective dose in the context of making a whole body dose and making a decision about evacuation or sheltering, or it is a dose to the thyroid if it's making a decision about iodine prophylaxis. So they are doses.

It is also possible that one can sometimes, from those doses, calculate a measure which might be dose-right. So there's an operational unit that you would use on the day to inform the decision making. But underlying the measure that one assess against each dose because at the core of it and the dose can be related to a measure of risk.

And the CNSC report, a significant portion of that in chapter 6 and 7, speaks about the risks arising from any particular exposures. And in terms of protective measures, one needs to make some -- draw some balance between the risk from the radiation and the risk from the protective measures.

So it is a dose -- one looks at doses as the appropriate measure here.

THE PRESIDENT: I'm told that Dr. Hirth is online. Do you wish to add anything to this dialogue?

Dr. Hirth? I guess not?

Okay. Any other questions, concerns? Mr. Tolgyesi?

MEMBER TOLGYESI: Yes. Dr. Solomon, on what basis you could say that, you know, you compare the release event of March 15 to that used by SARP study used by CNSC whereas the GLR source term 0.1 pBq of cesium-137 and 4 pBq of iodine-131, whereas at Fukushima it was 1.6 of cesium-137 and 16, which is -- when you look, cesium is about in order of 16 times or even more higher, 16 times, and iodine is about 4 times higher.

MR. SOLOMON: I agree with your observation, that the release from Fukushima in this particular event was significantly higher than the source term that is used in the Canadian model.

The significant issue for -- when we went to comparison, notwithstanding the source terms are different, when one looks at the doses that are assessed from the Fukushima event for the UNSCEAR assessment for the Canadian source term through the Canadian models, the doses that were assessed were similar.

Now, what does that say? That says then that the Canadian model is more conservative, that is it produces higher doses per release than the real event that occurred at Fukushima.

It needs to be observed that the Fukushima assessment was undertaken with real meteorology, that means on that particular day the wind -- there was actually a

rain event, so it was really quite turbulent, quite stormy, and the -- really the dispersion was significant.

The Canadian modelling, my understanding is that it's done with conservative meteorological conditions, more stable, and as such it produces higher doses and sort of from that release per source term, because of the conservative nature of the meteorology functions and the modelling.

I think if the -- it is potentially -- it's the source term that is decided for those scenarios, for the Canadian scenarios, is to say if the modelling into the future was done perhaps more -- less conservatively, then those doses potentially would decrease.

But the reality at the moment is that with the modelling that's undertaken within the CNSC report and the source term, the doses that are derived are of a similar magnitude to the actual doses estimated for the Fukushima event.

Is there any significance in that? Your observation about the source terms being different is quite valid and sound and that is correct. But the important bit here is that the doses that that come out of the Canadian model and the doses that are in the real event are of a similar magnitude and, as such, there is little value I think in looking to adjust the parameters or furthering

your assessment.

I think what I'm saying is that there's probably a level of conservatism there that the numbers that are assessed provide a reasonable estimate of what might happen in a real situation, notwithstanding that the source terms are different.

THE PRESIDENT: Okay. Thank you. Dr. Solomon, thank you very much for being with us here today and trying to clarify some contentious issues being discussed here for a long long time.

So thank you for this effort.

MR. SOLOMON: Thank you very much for allowing me to present my evidence. And if there are further questions associated with the memo, I would certainly be willing to address any inquiries after this particular meeting that you might have, either through myself or through Gillian.

So I wish you well.

THE PRESIDENT: Thank you.

Marc, what is next?

MR. LEBLANC: Yes. So I'm just going to verify if we have Mr. Hendrickson online for the next intervention. We will try to connect with him.

DR. HENDRICKSON: Yes, Mr. Leblanc, I am available.

MR. LEBLANC: I'll let the President introduce you formally with the CMD number and everything. Thank you, Dr. Hendrickson.

DR. HENDRICKSON: Okay.

THE PRESIDENT: So, as you heard, the next submission is an oral presentation by Dr. Hendrickson as outlined in CMD 15-H8.35.

Sir, the floor is yours or, not the floor, but the phone is yours. Go ahead.

--- Laughter/Rires

***CMD 15-H8.35**

Oral presentation by Dr. Ole Hendrickson

DR. HENDRICKSON: Thank you, Mr. Chair.

My name is Ole Hendrickson. I have appeared many times before the CNSC and its predecessor, the AECB. I thank Commissioners for this opportunity.

In testimony before the House Natural Resources Committee on June 14, 2015 Dr. Binder stated, "Our mandate is not to deal with economic issues and cost control."

Dr. Binder's insistence that the CNSC has no mandate to deal with economic issues and costs is absurd. Economic issues, safety and environmental

protection are inseparably intertwined.

The CNSC routinely makes decisions that greatly affect costs for nuclear power plant operators and, hence, electricity ratepayers. These include financial guarantees for decommissioning and the CNSC's cost recovery regulations.

The CNSC explicitly address cost benefit considerations. Consider Appendix A of the proposed new Licence Conditions Handbook or LCH for short. It says:

"For licensee-requested changes to the LCH, that include the licensee's alternative cost effective approach where applicable, CNSC staff will review the proposed changes, as required by CNSC Regulatory Policy P-242, 'Considering Cost-benefit Information,' and decide if the LCH should be modified. The CNSC document 'Risk Informed Approach for the CNSC Power Reactor Regulatory Program - Basis Document' contains information on how to consider cost benefit information in licensee submissions."

So here's a concrete example. Last February, during Senate Committee hearings on the *Nuclear*

Liability Act Dr. Binder said:

"...there is now added capacity to ensure the redundancy in emergency mitigation equipment to maintain safe shutdown of one or multiple reactors simultaneously. This added capacity includes 21 portable and mobile diesel generators to provide energy power, 20 cooling water pumps on site with municipal fire trucks acting as offsite support, and enough fuel to operate for days without offsite refuelling."

Industry insiders call these Fukushima pumps, these pumps and generators add to the cost of nuclear power. Can more money in technology ensure a meltdown won't happen in the Greater Toronto Area? Can money prevent acts of nature such as the earthquake and tsunami that caused multiple Fukushima meltdowns?

What risks are the public willing to accept? How much is the public willing to pay to reduce risks?

What should be of greatest concern to the Ontario public is that CNSC appears to be dictating to the people of Ontario that OPG must carryout refurbishment of

the Darlington reactors no matter how costly and risky this may be. Consider the wording of the proposed new licence condition 15.2, "The licensee shall implement a return-to-service plan for refurbishment."

This categorical statement suggests that if OPG does not refurbish the Darlington reactors and return them to service, it will be in violation of its CNSC licence. This wording is unacceptable, it must be changed to allow for the possibility that refurbishment will not be done.

Why not, "The licensee shall carry out any refurbishment activities in accordance with a Return to Service Plan"? We need to be open about the economic and safety risks of refurbishment, both to workers and the public. Frequent public hearings are the best way to ensure openness and ongoing scrutiny of OPG's performance in carrying out such a costly and risky process. The maximum licence term under these circumstances should be five years.

I wish to raise two other matters with my remaining time. The proposed licence has a special clause allowing OPG to, "possess, transfer, process, package, manage and store the nuclear substances associated with the operation of the Darlington Tritium Removal Facility".

The relevant licence condition in the *LCH*

is, "The licensee shall implement and maintain an operations programs for the Tritium Removal Facility, including a set of operating limits".

According to the *LCH*, the Tritium Removal Facility is designed to reduce radioactive tritium in heavy water inventories so as to reduce radiation exposure of licensee staff and reduce tritium releases to the environment. Specifically, this facility is designed for tritium extraction, tritium immobilization storage and tritium cleanup. The facility should keep tritium permanently immobilized and isolated from the environment.

Given these functions, why does the propose licence contain the words "transfer" and "package" with regard to nuclear substances associated with the Tritium Removal Facility? Is the intent behind the words "transfer" and "package" explained in the operations program for the Tritium Removal Facility? If not, the words "transfer" and "package" should be deleted from subparagraph 4, paragraph 4 of the proposed licence.

Finally, CNSC is proposing that CSA Standard N288.1-08, *Guidelines for calculating derived release limits for radioactive material in airborne and liquid effluents for normal operation of nuclear facilities*, be used to set allowable radiation emissions for Darlington. This CSA standard is included in both the

proposed licence and *LCH*.

A study published earlier this year by CNSC's Director General of Environmental and Radiation Protection and Assessment in the peer review Journal of Environmental Radioactivity shows very clearly that standard-setting bodies are seriously underestimating the amount of organically bound tritium, or OBT, found in the environment near nuclear facilities.

The study by Dr. Patsy Thompson and others specifically reference the CSA Standard N288.1-08 as using an inappropriately low transfer coefficient to estimate OBT activity. It is unacceptable to reference this invalid CSA standard in the proposed licence and *LCH*. OBT becomes incorporated in living organisms, including humans, for months or even years. It continuously gives off radiation and damages cells and cell components, such as DNA.

It is a very serious matter if the CNS fails to require its licensees to address OBT in a scientifically defensible and health-protective manner.

Thank you, Chair.

THE PRESIDENT: Thank you.

Questions?

Monsieur Harvey.

MEMBER HARVEY: First, I will ask the Staff maybe to clarify that notion that CNSC's not

concerned by, for example, the economics of the refurbishment, I mean because we are concerned by economy for the guarantee. Even when there is some option to solve a problem there is a certain cost-benefit analysis, and the same thing from the ALARA principle.

So could you clarify that notion?

MR. RINFRET: François Rinfret, for the record, CNSC.

There's no doubt that when we're dealing with enhancements of safety and need for safety as the licensee is required to approach the safety level of the new build, these enhancements are not subject to much question, and I think OPG can probably present this case where there's no question that the assessment goes in and the improvement is engineered and planned for refurbishment installation.

The matter can occur within their company when there are options to reach the same objective. Problem x needs a solution. When there's an alternative or more than one alternative, more than two or three systems, I mean it's normal engineering practice to take into account their cost benefit.

So we don't look for the methodology to reach the objective, we just want the problem to be solved and the gap to be closed. That's how the cost-benefit

analysis is introduced within this refurbishment project.

THE PRESIDENT: Since I've been quoted about this, I may as well clear what this intervenor misunderstood.

We don't decide whether their plant will be refurbished or not. It's a government-OPG decision. What we need to decide is how they're going to do it safely. The economic issue: we understand that safety costs. That's not what we talk about the economics here.

So we don't concern about the number of jobs created, what does it do to the community, et cetera. What we are concerned is: did we do as much safety improvement as possible, fully realizing that safety costs money? So get your economics right.

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

Just a couple of things I'd like to add, Mr. President.

The only thing I agree with the intervenor on is that we will never compromise safety and we oversee the regulatory activity. But he's got it all wrong with respect to cost benefit. Monsieur Harvey asked the question. From a safety requirement, to meet the CNSC requirement under regulatory document RD-360, we didn't even -- there was no cost benefit in any way, shape or form

applied with respect to safety that we required to be put in place. So the cost benefit was never applied from a safety perspective, as the President said.

If OPG is running their own economic factor, if they want to buy a machine for \$4 million versus spending \$4 million for retubing, that's their business. If OPG wants to do an economic feasibility study, is the refurbishment cost-effect for them, that's their business. Our job is safety. So they have to have that operation safe, as it was in day one or it's going to be at the end of its life.

So that's why the integrated safety review and the RD-360 takes a look at the whole safety component from a holistic perspective. So the cost benefit was not applied in any way, shape or form with respect to meet our requirements.

Now the intervenor is mentioning a reference to cost-benefit policy. As any other regulator in the world, and as specific in the developed world -- and this is not at the high-risk level -- if the licensee is not able to meet the regulatory requirement, they can propose an alternate way to take into consideration the cost-benefit analysis.

So a classic example that the Commission has heard quite extensively is during the new build. So

there was an evaluation for cost benefit with respect to once through or the cooling towers. So that's how we apply cost benefit.

So the interpretation by the intervenor is a bit exaggerated, probably misinformation or purposely, I'm not going to judge it, but that's what the cost benefit really is applied for.

So in conclusion, from a safety perspective, meeting our requirement, we didn't even invoke it because either they meet it or they don't.

THE PRESIDENT: Okay.

Another question?

MEMBER HARVEY: I've got one.

THE PRESIDENT: Go ahead.

MEMBER HARVEY: It's about the license, because the intervenor mentioned the fact that we give a licence for the refurbishment. But there's two things, a licence for operation and refurbishment. So to what extent those two things are linked together and both have to be completed? So can you...?

MR. HOWDEN: Barclay Howden speaking.

So they're all encompassed under a single licence, and if you read a licence you'll see the activities that are allowed under the licence, okay? And then within the various areas, as the intervenors point

out, the *Licence Condition Handbook* gives the details that describe what the compliance verification criteria would be to meet all of the licence conditions. So that's all there.

In terms of tritium, to move away just for a second to the Tritium Removal Facility, an example is: he talked about the different activities that are allowed, but then went to the licence condition for the Tritium Removal Facility and said the only thing is an operations plan.

But if you listen to what he said, the other activities, like transfer, package and transport you would find those programs elsewhere in the licence and with the appropriate compliance verification criteria that goes with it.

Also, in terms of transferring, transferring would be if you took it from one licensee to another licensee, but a licensee can only give it to another approved licensee to be able to do it.

MEMBER HARVEY: There is something in the licence about the timing of the refurbishment. Suppose there is delay, one year, two years, three years, does it matter for the licence?

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

From timing with respect to how they carry out the refurbishment, that is OPG's business, not our business. So in other words, if their plan -- let me put it this way, their plan is to carry out the refurbishment in three years, okay. The activity must be carried out in a very safe manner. If they decide to slip or encounter some difficulty, then we evaluate to make sure that safety is not compromised, or with respect to the reliability of their operations as they are carrying out the refurbishment, we evaluate that there is no impact on safety. So the timing or the completion of the refurbishment is not bound by any time, it is only bound by the safety itself.

So the intervenor makes a reference that the licensee must establish a program for return to service, because once they complete the refurbishment it's not a turnkey operation. So they have to come back with respect to approvals to ensure that the commissioning of what they have installed will operate as designed, a safety shutdown system. So they have to go through all kinds of testing and that is the program for return to service from the operation. It's not an obligation.

They have two choices. Either they complete the refurbishment so it is safe or they decide to shut down the reactor, not to continue with the work. From

our perspective, whatever they do, whatever they choose to do has to be safe.

MR. HOWDEN: If I could just add to Mr. Jammal's answer.

He has spoken of how they would be able to go through the process but at all times they have to maintain the radiation protection program, environmental protection, OSH, training certification, all through that regardless. And I think it's important that if the refurbishment is on time or not on time, that has to be done and then they have to make business decisions based on that, but if they return to service, as Mr. Jammal said, they have the four steps.

So again, just to remind people, we have a full compliance program which is led by our onsite inspector, supported with our staff in Ottawa, and if you recall, in Part 1, we went through the number of person days of effort that we put against this project at all times to give a demonstration of the intense oversight that we do have and we will augment that as necessary as we go if they go through refurbishment.

THE PRESIDENT: Before letting the intervenor speak to some of the issues that were raised, I would like to hear from Dr. Thompson about using the CSA standard for tritium.

DR. THOMPSON: Patsy Thompson for the record.

The CNSC staff investigation of tritiated water and organically bound tritium in various environmental compartments started when we were requested by members of the public in Pembroke to measure some of their vegetables and we started taking vegetation samples and soils and we realized that the data wasn't quite what we expected. And so we continued to do work in this area and have presented to some conferences and, as Dr. Hendrickson mentioned, we have published one paper -- we have published two papers actually but the most recent one in the Journal of Environmental Radioactivity.

Our finding is that the ratio of organically bound tritium to tritiated water is higher than had been expected and had been used in models, and traditionally because organically bound tritium is a bit more difficult to measure, public doses are estimated for OBT based on that ratio. So we identified that the use of the ratio that is in the CSA standard was probably not appropriate and not as conservative as it should be, and so we have identified that issue.

CNSC staff are members of the N288, which is the environmental radiation CSA working group or technical committee that handles all the environmental

standards, and this issue has been identified as an issue that will need to be addressed in the next version of the standard.

To move forward on revisions to the standards, scientific evidence is needed and we have encouraged other members of the working group, when they want issues to be identified, to come with a technical basis for the rationale and peer-reviewed papers is encouraged.

So we have done that and we are on -- we have another paper that is ready to be submitted on the same topic and we have had discussions internationally with colleagues from different countries.

The fact that the current version of the N288 standard is in the licence is not inappropriate because it is an accurate model for all radionuclides, including tritiated water, essentially the H₂O. It is conservative in many aspects and the public dose around nuclear facilities is very low.

In Darlington it has been less than 1 mSv for a period of time and the contribution of tritium to that very low dose is about 60 percent and the contribution from OBT is even lower than that.

So given the very small public doses and the small contribution from OBT, there is no urgency in

making modifications to the standard because we know that the doses are well controlled and doses to members of the public are low.

But when we present information when we have looked at the information from monitoring programs, when the values are higher we do look at the ratios from our peer-reviewed papers and the new scientific evidence to make sure that the doses are still adequately low, and they have been well controlled and well below the public dose limit for a long time for all facilities.

THE PRESIDENT: But when you know that the standard is being kind of significantly updated, maybe it's worthwhile to put a little footnote beside such standards to alert everybody that work is ongoing, particularly on this particular aspect.

DR. THOMPSON: Patsy Thompson for the record.

When the previous -- when this version of the standard was published, we were not so advanced in that work and the OBT measurement -- the measurements that are done in Canada are showing those patterns of a higher OBT to H₂O ratio. As you know, we have been doing collaborative research work with ERSN and the samples that are being taken in France don't show that pattern. So we don't yet understand the reasons why we are seeing those

measurements.

And so it is work that is going on. It has been flagged and will be dealt with by the CSA starting in, I believe, 2017.

THE PRESIDENT: Okay.

Dr. Hendrickson, anything to add?

MR. HENDRICKSON: Just two things. I will be brief.

When I look at staff CMDs I always look at the section on what changes are in this new licence that were not in the previous licence, and when I looked at the wording of the new licence condition 15(2), which I mentioned in my intervention, it struck me that that is too categorical a statement, that the licensee shall implement a return to service plan for refurbishment, because if for some reason refurbishment is deemed not advisable by either the licensee or someone else, then you are stuck with a rather forceful statement that requires an implementation of a plan that may not be needed. So I suggest you may want to look at that wording and see if you can come up with something better.

My other point would be with regard to the Darlington tritium removal facility. It has some fairly unique characteristics that make it rather different from a nuclear power plant and you will know that there are some

commercial activities associated with the tritium that is removed in that facility. I almost wonder if there should be a separate licence for that facility or at least a more fulsome set of conditions in the licence that deal with some of those unique activities which happen at that facility.

So thank you for letting me have those couple of points.

THE PRESIDENT: Do you want to address a couple of those points?

MR. RINFRET: François Rinfret for the record.

I will only address the element that deals with restart after refurbishment. That is one condition in the proposed licence that we have submitted for the Commission and this condition requires a licensee to prepare a return to service package. In other words, we would not let the licensee come back on power without having this full discussion and full review that includes the testing program and the assurance of the quality of components that have been put in.

With regard to another part of this licence, the operation of these units is limited by some of its components through the normal periodic inspection program limits and some more specifically on hours of

operation, for example, the pressure tubes. So that limits a whole aspect of this licence. Thank you.

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

Sir, if you allow me, with respect to the intervenor recommendation to separate licensing, the program associated with the activities onsite is under scrutiny of the CNSC staff to include the licensed activity. So when the intervenor mentions transfer package and the tritium facility, all of this activity must be conducted safely.

In addition, to split administratively a licence of no benefit with respect to safety or nothing but an added administrative burden does not add any value because the program associated with each licence activity is reviewed by CNSC staff and it is inspected by CNSC staff and there is no need to split per activity the licence.

THE PRESIDENT: Thank you.

Final, final thoughts, Dr. Hendrickson?

MR. HENDRICKSON: Well, I still don't believe I have heard an adequate response to my question of why the licensee shall implement a plan for refurbishment if it is deemed unnecessary to do refurbishment. So I will just to reiterate that that may be worthy of further consideration.

THE PRESIDENT: Okay, thank you.

MR. HENDRICKSON: Thank you.

***CMD 15-H8.160**

Oral presentation by Jo Hayward-Haines

THE PRESIDENT: I would like to move on to the next submission, which is an oral presentation by Ms Hayward-Haines, as outlined in CMD 15-H8.160.

Ms Hayward-Haines, please proceed.

MS HAYWARD-HAINES: Greetings to the Joint Review Panel, to OPG and to the Canadian Nuclear Safety Commission, other presenters and the audience. I am Jo Hayward-Haines, teacher, artist, activist, mother and grandmother.

I am here on behalf of the Peterborough Dialogues, the Council of Canadians, the Sacred Water Circle, Transition Town and especially for my three children and four grandchildren as well as all the children I have ever taught.

I would like to acknowledge that we are on treaty land of the Mississaugas New Credit Nation, that we are here on the shores of Lake Ontario living in ecosystems we share with many other living beings.

As humans, we can acknowledge that we are

capable of a conscious responsibility for the multifaceted interconnected systems of life of which we are a part. I am grateful for the opportunity to demonstrate this briefly here today.

On Monday, November 2, I arrived from Peterborough at Hope Fellowship to learn the Darlington hearings had been delayed by four hours. Later, I saw I had received notification of this delay at 10:36 a.m., six minutes after the scheduled starting time. So I took advantage of the situation by interviewing the Waterkeepers, who were also on time, and then I headed for the Nuclear Information Centre, which I had long planned to visit.

And what a wonderful exhibit of the history of electricity and the role nuclear energy has played. And how thrilling was the explanation given of the refurbishment mockup by a communications expert. The technology is brilliant and the associated training program impressive.

Had I not known of the gaping omissions regarding cost, safety, dangers to the environment and workers from emissions and nuclear waste, I would have applied for a job.

So this presentation will demonstrate that the basis for granting a 13-year licence for the operation

and refurbishment of Darlington nuclear is untenable for the following four reasons.

First, the economic and political environment. This influence on considerations of health and safety and the oversight needed in the operation of Darlington cannot be overestimated. The legacy of Fukushima has meant that the CNSC and OPG face many difficulties in translating that disaster to current realities here, 60 kilometres from Toronto, on the shores of Lake Ontario.

Not the least of these considerations is the all too human tendency to succumb to the preconceived view of the economic need for nuclear and the presumption that all the safety factors involved in such a high-risk venture can now be realistically addressed.

But in the light of Fukushima, I can imagine those dangers to be an overabundance of computer modelling versus actual possibilities for the example of the as yet unpredictable effects of climate change, compartmentalized thinking versus comprehensive overviews, complexity of evacuation plans with high-density populations with a history of evacuation exercises being less than encouraging, to name a few.

As stated in a recently released book, "Fukushima: The Story of a Nuclear Disaster," by the Union

of Concerned Scientists:

"Although the accident involved a failure of technology, even more worrisome was the role of the worldwide nuclear establishment: the close-knit culture that has championed nuclear energy -- politically, economically, socially -- while refusing to acknowledge and reduce the risks that accompany its operation. Time and again, warning signs were ignored and brushes with calamity written off."

This is a warning we need to take to heart. From an economic perspective, to spend time refurbishing nuclear power plants while the market for solar, wind and geothermal is skyrocketing may not be economically wise and these alternative energy sources are more flexible than nuclear. Once we are locked into a 13-year licence for refurbishment, the process grinds on despite current realities.

Nuclear power has declined from 17 percent of the energy grid in 1995 to 11 percent currently. Most reactors are shutting down faster than rebuilds. The reactors at Pickering for example will be past their due

date by 2020. Will a request for a 13-year licence be made for these reactors as well?

The second point I would like to address is health and our shared environmental systems, and of course these all involve safety. We need an equation for calculating the risks of costs, risks and benefits of energy sources. This complex issue was foreseen by the Royal Commission of Inquiry into Electric Power in the '70s, that unless the storage of nuclear waste issue was solved by 1985 there should be no more nuclear reactors.

How can the Canadian Nuclear Safety Commission ensure that nuclear waste produced at Darlington will be effectively monitored during the thousands of years it takes for radioactivity from these wastes to subside? What costs will this entail? If just the issuance of iodine pills is meant to be a panacea for the multiple long-term health threats posed by radioactivity from nuclear plants, what confidence can we have in the monitoring process?

When we use dangerous substances in manufacturing and energy production, we need comprehensive evaluation of these processes to determine effects on health and the ecosystem as a whole. As David Suzuki has stated, along with a growing number of Canadians, everyone has the right to a healthy environment. First Nations are

rightfully banning mining of uranium on treaty lands.

Will the oversight provided by the Canadian Nuclear Safety Commission ensure that those living in the environs of nuclear plants are actually living in a healthy environment?

My third aspect, the science. The question of a lack of inner pressure resistant containment structures in CANDU reactors certainly requires careful monitoring. These and related issues must be part of a thoroughgoing and transparent decision-making process. A mandate for realistic transparency realized by the publication online of CNSC's oversight is praiseworthy but the total processes of the Canadian Nuclear Safety Commission should reflect the basis of modern scientific thought.

As the noted physicist Fritjof Capra states:

"During the last thirty years, a new conception of life has emerged at the forefront of science -- a unifying view that integrates life's biological, cognitive, social, and ecological dimensions. At the very core of this new understanding of life we find a profound change of

metaphors: from seeing the world as a machine to understanding it as a network. ... We call the new conception of life a 'systems view' because it involves a new kind of thinking -- thinking in terms of connectedness, relationships, patterns, and context. In science, this way of thinking is known as 'systems thinking,' or 'systemic thinking,' because it is crucial to understanding living systems of any kind -- living organisms, social systems, or ecosystems."

And, I might add, this way of thinking is crucial in considering the implications of our energy sources on the ecological well-being of the planet and specifically from Darlington and Pickering, so close to densely populated areas, near crucial transportation routes, rail, roads, airports.

As Einstein famously said: We can't use the same process to solve a problem that was used to create it.

After World War II and the devastation from the fallout of Hiroshima and Nagasaki, it was rational

as well as good PR to initiate atoms for peace, peaceful nuclear energy, then atoms for war. Who could argue? But the whole spectrum of environmental effects of uranium mining, pollution from emissions, production of plutonium for energy in nuclear reactors and storage of radioactive waste wasn't a significant part of the decision-making process then and even now we are not yet dealing with these realities comprehensively with systems thinking.

My last point is our human legacy to future generations, not the least point for sure.

If we agree with Capra that modern science is system thinking and if we use the thought processes of connectedness, patterns, context, the following will not seem alien to the mandate of these hearings. Inspiration is not alien to science.

I am quoting from the *Earth Charter*, a UN document which proclaims that:

"We stand at a critical moment in Earth's history, a time when humanity must choose its future. ... The choice is ours: form a global partnership to care for Earth and one another or risk the destruction of ourselves and the diversity of life. Fundamental changes are needed in our

values, institutions, and ways of living. ... We have the knowledge and technology to provide for all and to reduce our impacts on the environment. ... Our environmental, economic, political, social, and spiritual challenges are interconnected, and together we can forge inclusive [and safe] solutions."

I respectfully urge the Canadian Nuclear Safety Commission to grant to OPG, for however many years it may take, a licence for decommissioning.

Thank you for the opportunity to participate.

THE PRESIDENT: Thank you.

Any questions? Comments?

Okay. Thank you for your intervention.

MS HAYWARD-HAINES: Thank you for allowing me.

***CMD 15-H8.47**

Oral presentation by Sandra Sinayuk

THE PRESIDENT: The next submission is by

teleconference, I understand, by Ms Sinayuk, as outlined in CMD 15-H8.47.

Can you hear us? Hello?

MS SINAYUK: Can you hear me?

THE PRESIDENT: Yes, we can. Go ahead.

MS SINAYUK: Okay. So my name is Sandra and I presented at the previous hearings a couple of years ago. I am a biology student at York University and last time I presented on behalf of my school's Environment Club in high school.

So the reason that I wrote to you and that I am presenting right now is because of the fact that last time myself and a lot of the other presenters asked you to consider a Level 7 like a Fukushima-scale accident and then after two years we still don't have access to the documents.

And what is kind of worrying is that the accident has actually been considered but it has been chosen to be censored and then I believe it was said that the information would be used malevolently in a public hearing. I would still like to insist that you release the document.

It's just worrying because, as I said previously, I have had relatives who have been affected by Chernobyl and kind of hearing that I won't be able to see

what I can expect in terms of a Fukushima-scale accident is quite worrying. Like we see that a serious nuclear accident happens about once a decade and we can't actually guarantee that an accident won't happen here.

So the reactors being right beside Lake Ontario and the fact that the water is drinking water for about half of Ontario's population is worrying and it seems a little bit not logical to renew the reactors because of that.

And also because I remember a couple of years ago there was an article about nuclear reactors, that they wanted to build them in India but then they would be liable for any accident that would happen, and so they chose not to do that. And then the fact that they want to have the same reactors here rebuilt and they would be not liable for an accident, and that's worrying because they are saying that it is safe to build them here but it's not safe to build them somewhere where they would be liable.

And also about the KI pills being distributed in a 10-kilometre radius, I would like to know on what grounds the decision was made, because countries like Switzerland will have a 50-kilometre radius that they include KI pills in. You can't actually predict -- like if there is an accident, you can't actually say that the fallout will stay within the 10-kilometre radius and it

will just depend on the direction of the wind. I have heard of people after Chernobyl being affected 100 kilometres and more away from the site of the accident. So I would like to ask why it is 10 kilometres that you decided on.

And also the fact that the reactors are very close to Lake Ontario and then there is chemical and thermal pollution being released, it makes it even more -- I think that it's still even more illogical to rebuild the reactors if there is a threat to -- if there is a negative effect on the organisms that are in the lake and also there are the health and safety risks.

I would also like to say that the 13-year licence, I would like to have a standard 2-to-5-year licence just because of transparency and safety reasons.

THE PRESIDENT: Okay. Thank you. Thank you for this presentation.

Does anybody have any questions? I don't know if you had a chance to listen, many of the issues you raised have been discussed here for the last three days. So feel free to then look at our webcast or in the proceedings that will come out. So thank you for your presentation.

MR. LEBLANC: Mr. President, I believe that the other intervenors are scheduled for this evening

and are not already here, unless Mayor Mitch Twolan would be in the room. He will be the next to present but I don't think he has arrived yet.

So in that context, I suggest --

THE PRESIDENT: Is there anybody else who would like to do it now and then go away? Now is the time. Now is the time to --

MR. LEBLANC: There is nobody else.

THE PRESIDENT: Okay, there are no volunteers. We will break now for dinner.

MR. LEBLANC: I suggest we first do the three written and then they are done.

THE PRESIDENT: Okay.

***CMD 15-H8.36**

Written presentation by Borden Rhodes

MR. LEBLANC: So, for Members, the first one earlier today was from Mr. Borden Rhodes, CMD 15-H8.36.

For OPG and everybody else trying to find the document, that would have been the third one this morning. And then I will ask the members if they have a question again. It is CMD 15-H8.36.

THE PRESIDENT: Did everybody find it? Any questions?

MEMBER HARVEY: H8.36?

THE PRESIDENT: Yes, 8.36.

Okay, I don't think there's any questions.

***CMD 15-H8.26**

Written presentation by Stephanie Woodward

MR. LEBLANC: As there are no questions, the other one was scheduled to be the last one yesterday from Ms Stephanie Woodward, CMD 15-H8.26.

THE PRESIDENT: No.

MR. LEBLANC: No, okay.

The next one is one that was in fact scheduled to be here tomorrow morning. It is the Ontario Sustainable Energy Association, CMD 15-H8.32 and 15-H8.32A. If you prefer, we can just do it tomorrow. You may not have the material with you.

THE PRESIDENT: No, I don't. I have Ms Walters.

MR. LEBLANC: Ms Walters may be presenting at 7:15 this evening.

THE PRESIDENT: This evening?

MR. LEBLANC: Yes.

THE PRESIDENT: Okay.

MR. LEBLANC: We are still waiting for

confirmation. So the one is one for tomorrow, so I can wait until tomorrow and we can do it in turn when we get to that one. It may be easier.

THE PRESIDENT: It's going to be a written one?

MR. LEBLANC: It will be a written.

THE PRESIDENT: Okay.

MR. LEBLANC: So we will deal with it tomorrow.

So, Mr. President, the other presenters are not scheduled until after dinner, which was 7 o'clock, so I think we should break for that time period and reconvene at 7:00.

THE PRESIDENT: Reconvene at 7:00, a quarter to 7:00?

MR. LEBLANC: Well, we may reconvene before 7:00 but we may not have anyone.

THE PRESIDENT: So we will sit here and wait. Seven o'clock it is.

--- Upon recessing at 5:46 p.m. /

Suspension à 17 h 46

--- Upon resuming at 7:01 p.m. /

Reprise à 19 h 01

MR. LEBLANC: Just to give you an idea of the game plan for this evening, we still have four oral presentations this evening. Three are confirmed. The fourth we are trying to confirm. And then, time allowing, the Members may use the time to do what they would normally have done tomorrow, that is, a round or two of questions that are outstanding from the three previous days. So we will see how this works. I just wanted to give you a heads-up that this is where we may go. Thank you.

***CMD 15-H8.90**

Oral presentation by Elaine M. Walters

THE PRESIDENT: Okay, so I understand that the next submission is an oral presentation by Ms Walters, as outlined in CMD 15-H8.90.

Ms Walters, can you hear us?

MS WALTERS: Yes, I can.

THE PRESIDENT: Okay, please proceed.

MS WALTERS: Okay.

I am opposed to Ontario Power Generation's application for an unprecedented 13-year licence to operate the Darlington Nuclear Station.

I believe that upgrading and continued operation of the CANDU reactors is an unreasonable risk to

the safety of Ontario residents. The four aging Darlington nuclear station reactors pose a serious potential danger to those of us residing within or in close proximity to the potential exclusion and evacuation zones in the event of an unexpected nuclear meltdown or other disaster, as has happened with Three Mile Island, Chernobyl and Fukushima.

When highly dangerous radioactive nuclear energy is involved, the risk of continued operation is not one to be taking. We don't want or need a disaster like Fukushima here. Nuclear power is too risky to grant Darlington a 13-year licence. In fact, no private company will insure it and plans to deal with a nuclear emergency or radioactive waste are inadequate. There is no possible guarantee of public safety and that is just not good enough. As we have seen most recently with Fukushima, there is no way to prevent or prepare for all possible potential malfunctions and disasters.

As a resident of Southern Ontario, this greatly concerns and worries me and it should concern everyone. It is time to permanently shut Darlington and finally make the move to using safe, clean energy solutions that pose no risk or threat to the public, wildlife or the environment.

I am deeply concerned that offsite emergency response plans at Darlington will not be able to

cope with a Fukushima-scale accident. This is unacceptable for a nuclear plant that's located in the most densely populated region of Canada.

If OPG is to be allowed to rebuild the Darlington nuclear station, they should be required to prove that their emergency plans can protect Ontarians, which of course they can't. I am especially concerned that OPG's unprecedented request for a 13-year licence will reduce public transparency. Reduced certainty may also increase the risk of accidents.

No Canadian nuclear power reactor operator has ever been given such a long licence. For the past 50 years, Canadian nuclear stations have been given 2-to-5-year licences. It makes no financial sense to grant Darlington a 13-year licence and permission to rebuild the four aging Darlington reactors without an independent review of the cost and alternatives to rebuilding the Darlington nuclear station.

No nuclear plant in Canadian history has delivered on time or on budget. The cost of renewable energy is dropping rapidly. Currently available water power from Quebec and conservation programs are already less expensive than nuclear power. We would be better served in Ontario to examine these options over expensive, risky nuclear power.

The cost and risk associated with nuclear power are far too high to grant OPG's request for a 13-year licence to operate Darlington. The continued operation of Darlington is a highly unreasonable risk when we have not even looked at implementing safe green alternatives. It is a highly unreasonable risk because OPG is not imposing modern safety standards or validating emergency plans as they should. Therefore, this plant should be shut down and the resulting nuclear waste disposed of in secure permanent containment.

One only has to look at the unfortunate precedent of Three Mile Island, Chernobyl and more recently Fukushima to clearly see what completely unexpected disaster can occur with any nuclear power plant or station. In the event of a nuclear meltdown, ongoing radioactive emissions might portend an imminent, uncontrollable release of unlimited catastrophic proportions and for the safety of everyone residing within the potentially affected area, and who knows how far beyond, the nuclear power station at Darlington needs to be shut down and we urgently need to make the move to clean, safe energy sources. We could have and should have done this decades ago. Our future depends on it.

I ask that the CNSC reject OPG's licence application for Darlington.

Thank you.

THE PRESIDENT: Thank you.

Questions?

No, there are no questions. So thank you for your submission.

MS WALTERS: Thanks for allowing me to speak.

***CMD 15-H8.157**

Oral presentation by the County of Bruce

THE PRESIDENT: I would like to move now to the next submission, which is an oral presentation by the County of Bruce, as outlined in CMD 15-H8.157.

I understand Mr. Twolan will make the presentation. Over to you.

MR. TWOLAN: Thank you, Mr. Chair and to the Panel. For the record, my name is Mitch Twolan, I am the Warden of Bruce County.

On behalf of the County of Bruce, I would like to thank you for the opportunity to participate in these CNSC hearings.

The County of Bruce is home to the Bruce Power facility. Given the Bruce Power facility is the largest nuclear power generating facility in the world,

Bruce County Council is focused on the ongoing maintenance of safety procedures, including the receipt of low-level waste from other sites. The Bruce site currently assumes low-level waste from Darlington operation.

The County of Bruce is the fortunate beneficiary of having Bruce Power and Ontario Power Generation serving our County. As part of the day-to-day operations and nuclear operations across the Province of Ontario, safety must be of paramount concern.

Arguably, the most dangerous part of nuclear power is the treatment of waste. The Darlington facility maintains extremely high standards and measures of operations for the transport of goods through Bruce County to its ultimate Bruce Power destination in Kincardine.

The contractual obligation between Bruce Power and Darlington has been longstanding. The relationship for waste disposal has been in place for many years. The Darlington site ensures appropriate measures are present to guard against improper transportation and disposal methods are always present. At no time has the County been aware of any violation of safety or transport protocols.

As stated, Bruce Power has a contractual obligation to receive the waste from the Darlington site. Given the County's vested interest in operational safety

and security of the goods, it is reassuring that world-class standards of movement of low-level waste is respected and honoured. The overall safety of our community is of paramount concern.

The County of Bruce at its session held the first day of October 2015 endorsed a resolution to formally support the licensing of Darlington Nuclear Power Generating Station.

So on behalf of Bruce County Council, I wish to reiterate our support for the relicensing application of the Darlington facility.

Thank you for having me.

THE PRESIDENT: Thank you.

Questions? Dr. Barriault?

MEMBER BARRIAULT: Just a brief question. Are you aware of any accidents involving transport of nuclear materials?

MR. TWOLAN: No, I'm not.

MEMBER BARRIAULT: No. OPG, have you had any incidents in transportation?

MR. DUNCAN: Brian Duncan for the record. I will let my colleague Laurie Swami answer.

MS SWAMI: Laurie Swami for the record. We have been safely transporting nuclear

materials between our facilities for well over 40 years. There have been a few minor collisions that did not result in the release of any radioactive material to the environment. They were very minor in nature.

MEMBER BARRIAULT: Do you have a system whereby you train the local fire departments on how to handle these substances?

MS SWAMI: Laurie Swami for the record. Yes, we do. We reach out to the communities that we travel through and we provide sessions for emergency responders so that they can be prepared. We have a full emergency response protocol around our transportation program, which would include reaching out to those as well as to the facilities, the nuclear facilities close to the roadways, and we have arrangements with the other operators to ensure that there would be a response not only from the emergency responders but from trained nuclear professionals.

MEMBER BARRIAULT: Thank you.

Thank you, Mr. Chairman.

THE PRESIDENT: Question?

Monsieur Tolgyesi?

MEMBER TOLGYESI: Is this transportation included in your emergency plan and how have you handled it?

MR. TWOLAN: It is part of the protocol for all of Bruce County. For example, I am the Mayor of the Township of Huron-Kinloss and about three years ago Bruce Power initiated an emergency response exercise that involved many counties and many municipalities and part of that exercise was a nuclear accident in the Village of Ripley. So the County and the local municipalities are quite aware of the response. So it is part of our plans, for sure.

MEMBER TOLGYESI: And Emergency Ontario was involved also, or it was just regional?

MR. TWOLAN: No, this was the Ontario Management -- or Emergency Management group was also involved.

THE PRESIDENT: It is my understanding that you Chair the Community of Mayors around the Great Lakes. Did you have an occasion to discuss what is this -- all this petition against low/intermediate waste management and did they have alternative solution?

MR. TWOLAN: For the record, Warden, Bruce County, Mitch Twolan again. Yes, I'm the Chair of the Great Lakes St. Lawrence Cities Initiative which is made up of 117 municipalities and cities around the Great Lakes, including St. Lawrence cities -- or St. Lawrence River regions. So this incorporates cities like Chicago,

Toronto, Montreal, Québec City, just to name a few.

Obviously there was some issues in the past with our group regarding the movement of steam generators from the Bruce site to the proposed location in Sweden. That definitely got the attention of some of our city fellow mayors around the Great Lakes Basin, but since then there's definitely been a lot more dialogue between not only myself, obviously as my position in Bruce County and being home to the largest nuclear facility in the world, it sure brought a lot of dialogue.

And at this time obviously the Great Lakes St. Lawrence Cities Initiative made a intervention for the DGR in Kincardine and at this point our organization's been quite silent just waiting for the review and -- or the joint review panel's recommendations by the new Minister of Environment to be heard.

THE PRESIDENT: You're appointed for how long for this wonderful job?

MR. TWOLAN: One year.

THE PRESIDENT: Ah. You may be on just in time for their decision.

MR. TWOLAN: I could be, yes.

THE PRESIDENT: Right. I wish you luck.

MR. TWOLAN: Thank you.

THE PRESIDENT: So thank you. Thank you

for the intervention.

--- Off record discussion / Discussion officieuse

THE PRESIDENT: Our next submission is an oral presentation by New Clear Free Solutions as outlined in CMD 15-H8.43.

I understand that Mr. Rouse is coming to us via teleconference.

Mr. Rouse, can you hear us?

MR. ROUSE: Yes, I can.

THE PRESIDENT: Okay. Please proceed.

***CMD 15-H8.43**

Oral Presentation by New Clear Free Solutions

MR. ROUSE: Good evening, Commissioners.
This is Chris Rouse, for the record.

My intervention should be quite short this evening. As per my submission, I don't think that a licence for refurbishment should be granted until Fukushima-style release, release not to be confused with dose, of some order of Fukushima is studied and given to the public.

Two, that this release should be included in Darlington's EA follow-up program because an external event below the one-in-a-million threshold for

consideration of a large release.

And number three, that all of Dr. Sunil Nijhawan's concerns have been resolved, especially his concerns relating to pressure release and hydrogen mitigation. I'd like to thank Dr. Nijhawan for his continued perseverance in safety. And many of his concerns that have come to light are directly related to the Fukushima Action Plan, in which most of these items have been closed, but concerns may quite a bit differ were you looking at a lot of these issues that have been determined closed, so...

Anyway, that's my presentation. I'd be happy to take any questions.

THE PRESIDENT: Okay. Thank you.

Questions? Who wants to start?

Well, let me start. On the second page, the intervenors talk about -- you label them:

"R F9 The Government of Canada should consider inviting an international peer review mission for emergency preparedness and response."

Is there such an IAEA service? If memory serve, I think there is one.

MR. HOWDEN: Yeah, Barclay Howden speaking. There is one, it's called EPREV and Luc Sigouin

can speak more in detail, but it is our understanding that Health Canada has requested one but it hasn't been set.

But I'll ask Mr. Sigouin to give you a little bit of an idea of that peer review process.

MR. SIGOUIN: Luc Sigouin, for the record.

To add to what Mr. Howden has said, Health Canada's coordinating Canada's request for an EPREV mission. They're in discussions with the IAEA on scheduling it, but they're also working with provincial and federal partners on establishing an appropriate timeframe for that.

In discussions with Health Canada about the status of that, they're expecting to undertake the mission or request for the mission to be in 2017.

If I could pass it on to Mr. Jammal who would like to add some additional information.

MR. JAMMAL: In addition to what my colleagues mentioned, when we had the integrated review, regulatory review mission from the IAEA in 2009 and the follow-up 2011, in addition to the EPREV emergency preparedness review, our response to Fukushima was evaluated, and so they did evaluate our emergency program.

So in every IRRS mission there is an evaluation regarding the emergency preparedness of the regulator, but the EPREV goes into much more detail with

respect to scenarios and much more in-depth review for the emergency preparedness.

So just to close the loop, we had a review at the highest level with respect to the program itself and the EPREV is upcoming with respect to the detailed review of emergency preparedness.

THE PRESIDENT: Does CNSC staff participate in any such emergency review elsewhere?

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

Mr. Raoul Awad was actually leading a -- come on up, Bro -- he did lead a mission to the United Arab Emirates and we did participate in multiple reviews and some of us actually worked on the modules for the review for the IAEA to use.

THE PRESIDENT: But I mean, a place where there are nuclear power plants.

MR. AWAD: Actually I led the mission to the United Arab Emirates where four nuclear -- four reactors being built and it was in March this year, and I think you can -- Mr. Rouse can have access to the communiqué at the end of the mission which is on the IAEA website and on our website too.

THE PRESIDENT: So I'm trying to figure out whether -- is there provincial, is the Office of the

Emergency Management aware that Health Canada is talking about 2017?

MR. AWAD: Health Canada has already called a meeting with all the stakeholders, including provincial and federal partners in preparation for 2017 EPREV mission to Canada.

THE PRESIDENT: So I assume that's not a bad deadline, not to be embarrassed by peer review coming from outside and saying that we don't have an updated appropriate plan.

MR. AWAD: Actually -- Raoul Awad, for the record.

That federal plan already updated and tested during unified exercise. The provincial plan will be updated, will be ready for the mission, for the mission -- for the EPREV mission.

THE PRESIDENT: Okay. Thank you.

Ms Velshi...?

MEMBER VELSHI: Thank you.

Question for staff. The intervenor talks about an imminent new CSA standard for emergency planning. That's already been issued; has it not, and then we've got the new REG DOC 2.10.1. I just wanted to confirm that.

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

The answer is yes, Ms Velshi, the RD 2. -- sorry, I've got to look up the numbers -- 2.10.1 has been released and so has the CSA 1600 series with respect to emergency preparedness.

THE PRESIDENT: No questions?

Okay. Mr. Rouse, any final thought?

MR. ROUSE: Yes, I was speaking of IAEA peer reviews. Could the staff update us on the SEEDS review, the seismic evaluation that all the Canadian power plants are supposed to go through?

THE PRESIDENT: Sorry, I didn't understand what you just said. Could you repeat the question?

MR. ROUSE: Oh, there was supposed to be an IEA SEED review of all the Canadian nuclear power plants for seismic evaluations. Could staff update us on the status of that?

THE PRESIDENT: Staff?

MR. FRAPPIER: Gerry Frappier, for the record.

So there was early planning to look at getting an IAEA review that they would come and take a look at our seismic evaluations. We had thought we might do that even as early as this year. As it turns out it could not get scheduled as such. We are still looking at that as a possibility but it will be at least a couple of years

before we can get everything lined up to be doing it.

Yes, because specifically it was conflicting with other reviews that we're having from the IEA, in particular the security one, the IPPAS that has just occurred. So with that we thought the eye pass one was a higher priority.

THE PRESIDENT: Okay. Anything else, Mr. Rouse?

MR. ROUSE: No, that's fine.

THE PRESIDENT: Okay, thank you for your intervention.

MR. ROUSE: Thank you.

***CMD 15-H8.38/15-H8.38A**

Oral Presentation by Beyond Nuclear

THE PRESIDENT: We now will move to the next submission which is an oral presentation by Beyond Nuclear as outlined in CMDs 15-H8.38 and 15-H8.38A. I understand that Mr. Kamps will make this presentation. Over to you.

MR. KAMPS: Hello, can you hear me?

THE PRESIDENT: Yes, we can hear you. Please proceed.

MR. KAMPS: Okay, thank you very much.

Yes, I am making this presentation on behalf of Beyond Nuclear and its members in Canada as well as in the United States around the Lake Ontario watershed basin. I am also presenting on behalf of Nuclear Information and Resource Service as indicated in my written submission. For this oral submission I am simply summarizing some of the main points made in my written submission, and they include the following:

Ontario Power Generation has no safe, sound plan to manage the radioactive waste that would be generated during the rebuilding of and the extended operations at the four CANDU reactors at the Darlington Nuclear Generating Station.

OPG's proposed Deep Geologic Repository at Kincardine, Ontario and the numerous nuclear waste management organizations' candidate sites for an irradiated nuclear fuel DGR would be located on the shores or in the watershed of the Great Lakes, putting the drinking water supplies of 40 million people in eight U.S. States, two Canadian provinces and a large number of Native American and First Nations at dire risk and that is just in this generation. The drinking water supplies for countless millions of people in each and every generation in the future forevermore would also be put at risk.

Allowing Ontario Power Generation to

rebuild Darlington Nuclear Generating Station and to extend the operations for another 20 years into the future will add significantly to the amounts of so-called low, so-called intermediate and also high-level radioactive wastes for which there is no safe, sound long term management plan.

And I do have some specifics in terms of quantities of the various materials I just mentioned. So I will try to turn to those now, again from my written submission.

Low and intermediate level -- let's see here. And this is taken from Ontario Power Generation documentation so that is my citations here.

So most significantly three decades of continued operations which would be the end results of the rebuilds from the inside out of these four CANDU reactors which is part and parcel of this 13-year licence extension, would generate 15,000 additional metric tonnes of high-level radioactive wastes that's irradiated nuclear fuel. And for our members in the United States to translate that to a more familiar figure of U.S. "tons", so to speak, we have to multiply by 1.1023 so that's 16,500 "U.S." tons of additional irradiated nuclear fuel that would be the result of an approval of this application.

In addition, if Darlington's four CANDU

reactors are rebuilt and operated for the additional proposed decades into the future, this would produce a total of around 16,000 cubic metres of additional low, so-called low-level radioactive waste.

In addition, 20 years of additional operations or 30 years of additional operations at Darlington would generate a total of around 4,000 cubic metres of additional intermediate-level radioactive waste.

Also, reactor refurbishments performing heart transplants on the CANDUs would generate another 500 cubic metres per unit per year of low-level radioactive waste.

Intermediate-level radioactive waste generated through refurbishment activities would include some 3,860 cubic metres of highly radioactive retube waste.

Moving on here, given the unanswered questions; for example, the status of the proposed DGR for low- and intermediate-level waste for the Province of Ontario at Kincardine at the Bruce Nuclear Generating Station, also given the uncertainties surrounding DGRs for high-level radioactive waste disposal, it is irresponsible and unacceptable to approve the generation of these additional radioactive wastes of the various categories.

And I should point out that there is an unacceptable conflict of interest going on here that the

Canadian Nuclear Safety Commission is in a position to approve the ongoing operations, including the refurbishment at Darlington while at the very same time playing a predominant role in the approval of the DGR at Kincardine for low- and intermediate-level radioactive waste. There is a circular logic in these overlapping processes.

A part and parcel of the DGR at Kincardine, Ontario is apparently the potential for so-called dilution as the solution to radioactive pollution into the Great Lakes. That came up, as I submitted in my written testimony, when Nukewatch Wisconsin, John LaForge, confronted a Joint Review Panel and the proponent, OPG, as well as the Canadian Nuclear Safety Commission staff with a brochure that assumed that dilution of the radioactivity from the DGR into Lake Huron would be okay. In fact, the proponent came back and said that that would be just fine if the entire contents of the DGR were to leak.

And that is not okay with Beyond Nuclear. It is not okay with NIRS. It is not okay with millions of people throughout the Great Lakes Basin as represented by some 175 resolutions against the DGR.

And the reason I bring all this up is because the radioactive waste that would be generated at Darlington during the 13-year licence extension which is a precursor for decades of operations, decades of future

operations for radioactive waste generations to come is dependent upon these proposals for dumping at Kincardine low and intermediate and just in the last week or less.

Again, one of the Kincardine area municipalities that has volunteered to be the high-level radioactive waste dump for all of Canada has moved forward in the NWMO process. So we are talking about low-, intermediate- and potentially high-level radioactive waste disposal on the Great Lakes' shorelines. And this proposal is part and parcel of those dump site proposals.

And so I would just like to conclude by stating that as a culmination of their resistance to the building and commissioning of the Darlington Nuclear Generation Station in the first place, David Martin and Irene Koch of Nuclear Awareness Project built a time capsule at the front entrance of the nuclear power plant, with the permission of the local municipality. David Martin used stones from nearby farm fields to build the marker, stones donated by farmers who opposed the construction of the nuclear power plant in the first place.

Beneath the marker and within the time capsule were buried documents and other reminders of the resistance to the construction and operation of Darlington Nuclear Generating Station, so that future generations would know that people had resisted. In late March/early

April of 2011, shortly after the beginning of the Fukushima Daiichi nuclear catastrophe, and amidst the Darlington new build CNSC proceedings taking place at the time, David Martin told me that the time capsule should be dug up now, not decades in the future, because obviously the lessons had not been learned, and needed to be learned now. Nothing could be more true now that Ontario Power Generation has applied for a 13-year license extension, permission to rebuild Darlington Nuclear Generation Station which sets the stage for decades of future operations and radioactive waste generation.

And one last point that I do want to add, it's just the sheer impossibility of evacuating the metropolitan population centre of the Greater Toronto Area in the event of a catastrophic radioactive release from one or more of the nuclear power reactors at the Darlington. To paraphrase the Governor of New York who just stated in the Indian Point context near metropolitan New York City, "What are people supposed to do, swim to Jersey?" So what are people in the Greater Toronto Area supposed to do, swim to the United States if the worst happens at Darlington?

And with that I will conclude. Thank you.

THE PRESIDENT: Thank you.

Comments? M. Tolgyesi...?

MEMBER TOLGYESI: Yes. Merci, Monsieur

le Président.

On pages 3 and 4 of submission 38.A, this is regarding used fuel storage security. Intervenor is comparing dry cask versus fuel storage vulnerability. According to him dry casks should be much safer, more secure against attacks. Could you comment on that, OPG?

Page 3 at the bottom and page 4 on the top.

MR. DUNCAN: Brian Duncan, for the record.

Forgive me. It just took us a second to catch the reference.

So dry cask -- so we have irradiated fuel-based storage for fuel as it is first discharged from the reactors because we need to liquid cool it. You know, that's the simple fact and dry cask storage for the fuel after it's been in the irradiated fuel base for the 10-year period of time.

You know, as far as how we protect the facility, how we ensure the security of both of those areas, I think we can demonstrate that we are able to ensure the integrity of the fuel pools, we are able to ensure that the area, the site itself is well protected. And the nature of CANDU fuel, as you know, is that even on loss of cooling pools I have days before I really have to do anything; days and days where I can manage that.

So I think dry cask storage there is a lot to be said for it. Once it's in the casks it pretty well sits on its own, but by the nature of how we manage our fuel the bay storage is needed for those first years. But we believe it's a safe and it's a manageable process.

THE PRESIDENT: Staff?

MR. HOWDEN: Barclay Howden speaking.

So I think there is three parts to this question. One, I think we should talk about first of all the robustness of the fuel bays. So when the fuel is in the bays before it's been moved to dry storage, and Mr. Frappier will speak of that; the robustness of the dry storage so when it's been moved out to dry storage, and Karine Glenn will speak to that; and then the last one if you sort of want an overview in terms of security, the umbrella of security, Mr. Michael Beaudette will speak to that.

So we'll go from Mr. Frappier to Madam Glenn to Mr. Beaudette.

MR. FRAPPIER: Gerry Frappier, for the record.

So I think it's very important to understand there is a big difference between the irradiated fuel in a CANDU reactor versus irradiated fuel in a PWR on two very important counts.

One is that the heat generated from the fuel is much, much, much lower with the fuel coming out of a CANDU reactor than it is for fuel coming out of a PWR. And we can get into a whole bunch of details if you want, but the point is it's a lot, lot cooler. It doesn't generate as much heat. It doesn't require as much water for as long to keep it cool.

The other thing that is very important is just the geometry, if you like, of the fuel bays for CANDU reactors versus some, like the ones in Fukushima and many of the ones in the United States. Fukushima, the irradiated fuel bays were at height they were at a certain -- a few stories up, if you like. In Canada all the fuel bays are on ground. The Darlington fuel bays are seismically qualified. They are very, very strong structures.

As OPG was just mentioning, they have days -- if there was nothing to be done to them they could sit there for days before you would have to even add any water. So it's a very, very slow-moving process to get from the point of having water that's keeping it all cool versus having any concern whatsoever for the fuel to damage itself from not being covered.

Furthermore, the reactor -- the irradiated fuel bays are outside of the nuclear plant but within the

complex.

And finally even if there was to be a terrorist attack of some sort, the fuel bays at Darlington are double-lined so there is a steel liner that would have to fail and then you have a concrete sort of lining. If you can envision some kind of a crash or some kind of bomb or something like that to be put in there, there is quite a -- you know quite a bit of -- five mmm thick steel liner. If that was to fail the water would still be contained by the overall concrete liner which, as I said, the whole area is very seismically-qualified. So it's a very, very robust fuel bay.

The other thing is, of course, it's regularly inspected. It was done, last inspected in 2015. It meets all the design requirements and beyond that as -- I think we're going to talk a little bit more about it tomorrow as to some of the Fukushima action items that have come out to further strengthen the irradiated fuel bay.

So all that to say that it's very hard to conceive of any kind of attack that would lead to all the water leaving the fuel bay and it does not seem to be so credible to us.

And I'll pass it back to Karine.

MS GLENN: Karine Glenn, for the record.

After the fuel leaves the wet storage it's

placed into a dry storage container and transferred over to the Darlington Waste Management Facility. There, that container is welded shut and it is then placed into storage inside one of the buildings that is dedicated for that purpose at the Darlington Waste Management Facility.

The containers that are used, the dry storage containers are constructed out of concrete and steel. They weigh several tens of thousands of pounds each. They are very robust and they are also designed to be transport containers and therefore they undergo stringent testing in order to prove the robustness in accident scenarios including fire, drop; immersion. So they are very robust containers. Therefore, the security and the safety of the fuel is maintained in dry storage.

It's important also to note that when the fuel is in dry storage it no longer requires active heat dissipation. It is just passive heat dissipation just through normal air circulation.

MR. BEAUDETTE: Michael Beaudette, for the record. I am the Director of the Nuclear Security Division at the Canadian Nuclear Safety Commission.

I would just like to add on the umbrella as referred to the security program. I think it is important to note that the licensee is required to produce and submit annually a threat and risk assessment for their

entire facility and that includes of course all of their waste management facilities. That assessment and that threat and risk assessment is reviewed by the Nuclear Security Division staff.

They are also required to submit a very thorough security plan on an annual basis. Again, that is very thoroughly reviewed by the Nuclear Security Division.

And it is from those two documents that we follow up with our robust inspection program that is conducted on an annual basis.

The Nuclear Security Division also has an internationally-recognized performance testing program which drives a full force on force exercise at these facilities on a once every two year basis.

So with all those elements in place we get a regular look at the entire facility including the waste facilities that are at present.

And I think it is probably worth noting if I can that very recently, in fact just last Friday, was the culmination of a two week or a 12-day international physical protection advisory service mission which consisted of 10 members, nine different countries and a representative of the International Atomic Energy Agency looking at Canada's nuclear security regime. And one of the sectors they looked at very closely was the waste

management process.

Their report has just come out. If I can just quote one of the summary lines, it basically said that the IPPAS team observed that the CNSC demonstrates a high level of awareness and prioritized a commitment to address the challenges of nuclear security and they also recognized the facilities for very good practices.

Thank you.

THE PRESIDENT: M. Harvey...?

MEMBER HARVEY: Just to continue that line, does the fuel in itself represent any interest for terrorists?

MR. BEAUDETTE: Michael Beaudette for the record.

In Canada the waste fuel is natural. It's very low risk and as is pointed out, the containers it's actually stored in is very, very robust. It would take a considerable amount of time. The entire security posture is built on a detect, delay and respond capacity and, as was pointed out by my colleague, Gerry Frappier, it would take them days to even begin to get at any of those -- the contents of those containers and there is plenty of time to react.

The licensees have their own response forces onsite but they also have of course very close

collaboration and very detailed plans for the offsite response that would come from the police force jurisdiction.

MEMBER HARVEY: My question was a little bit different. It was just to know that the fuel in itself, could the fuel be used by a terrorist to do something? Is this something that can be of some interest for terrorists?

MR. FRAPPIER: Gerry Frappier, for the record.

So certainly anything nuclear could be used as a communications coup, for sure, as far as if they were able to either steal some or have it dispersed in some way. And so from that perspective it would be of interest for them. However, the fuel is a very complex and dangerous material so it's not like it's something they could pick up with their hands and run away with. So there is a certain amount of self-protection, if you like, just because of the radiation levels.

And it's almost impossible to conceive of any terrorist organization being able to do any kind of reprocessing so that you could use it for, you know, nuclear weapons or anything like that. I mean I don't think that would be possible.

And of course, we have safeguards in

place. The IAEA requires safeguards. So there is continual tracking. So it's not like they could sneak off and people would not notice it.

But I would say that the concept of terrorists' interests in the fuel bundles would be more from the perspective of being able to say they successfully attacked a nuclear power plant.

THE PRESIDENT: Thank you.

Dr. McDill?

MEMBER MCDILL: Thank you. This question is, I think, for staff.

Apart from the fact that the low to intermediate level Deep Geological Repository hearing process was led by a joint review panel of Environment Canada and CNSC and is now before a Minister, is there anything under our Act that prohibits or presents us with a conflict of interest if we are looking at two facilities simultaneously that might have an interdependency?

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

No, there isn't. The Commission -- what I would recommend for the intervenor, I would strongly recommend for the intervenor to participate into CNSC 101. And I think that will provide him with a clear structure of the CNSC according to the Act.

And briefly, the CNSC can appoint its own Commission Members through the Act, and it can consist of representation from CNSC or other government agency. But in -- to answer your question, there is no conflict of interest.

The decision of the Commission is a decision by the Commission itself.

THE PRESIDENT: Any other questions?

Okay. Back to you, Mr. Kamp. Any final words, any comments?

MR. KAMP: Certainly so.

Fukushima was mentioned, and also kind of a calming idea was put out there that there would be many days to respond to a problem with a storage pool. I would point out that, at Fukushima Daiichi, it took 10 days to turn the lights on in one of the control rooms. And through sheer luck, the pools at Fukushima Daiichi did not boil dry, did not drain, but they did not know that until much later.

In fact, there was an assumption that they had lost water, especially in the Unit 4 pool, which led to very desperate measures taken by the Japan Self-Defence Forces of dropping sea water by helicopter onto the pool to try to fill it with water because they weren't sure if there was water in it or not.

And in fact, some of the worst doses suffered by workers or emergency responders during the entire course of the Fukushima Daiichi catastrophe were to those pilots of those helicopters.

And so to counter this calming message that came out of both Ontario Power Generation and the Canadian Nuclear Safety Commission staff, there is tremendous danger of a pool fire that could lead to as much as 100 percent of the radioactive cesium 137 escaping the pools, which are not in radioactive containment structures.

Someone who spoke -- I couldn't follow who was speaking -- tried to take credit that the pools are not in the reactor structure.

Well, that's actually a problem. The pools are not in a radiological containment structure, and if there is a fire, whether it's due to a sudden drain-down of the cooling water supply or a slower motion boil-down of the cooling water supply, as much as 100 percent of the very hazardous radioactive cesium 137 can escape.

And in terms of the terrorist threat, I think that one way of looking at the pools in particular because it is such a concentration of high level radioactive waste one place outside of the radiological containment structure is if a successful terrorist attack were to take place, this can be regarded as a dirty bomb in

your back yard, a dirty bomb in your front yard, a dirty bomb in a very concentrated population centre of Canada that would affect the United States downwind and downstream.

And I cited -- in my written submission, I cited Dr. Gordon Thompson's work where he looked at a Canadian defence agency which looked at a radiological dispersal device attack, a hypothetical one, located at the CN Tower in downtown Toronto looking at a very small quantity of radioactivity that was dispersed by a conventional explosive.

The thing is, when you're talking about the pools for storing high level radioactive waste at Darlington, you're talking about a much larger quantity of radioactivity. Orders of magnitude more. Many orders of magnitude more than were looked at by Defence agency study in Canada.

And the clean-up costs that that study determined if this attack was to take place, this hypothetical attack, were off the charts astronomical. And so all you have to do is look at the possibility for what amounts to a massive dirty bomb attack if there is a successful terrorist attack on these pools.

The problem is --

THE PRESIDENT: Can you let somebody reply

to some of your comments?

So first of all, I want to know some --

MR. KAMPS: If I could finish, please. I sat patiently for 15 or 20 minutes listening to multiple speakers tearing apart my arguments, so if I could make one last point before I end.

That is, that once the irradiated nuclear fuel is transferred into dry casks, it is a step in the right direction, but the dry casks themselves are not designed against terrorist attack.

There are anti-tank missiles, for example, that can blast a hole in the side of the dry casks and ignite the radioactive waste inside and then you, again, have a disastrous release. It's not as much concentrated in one place as in a pool, but if attackers showed up with enough explosives and enough incendiaries, they could take out all the dry casks as well.

And that's why hundreds of groups across the United States and groups in Canada as well have called for hardened on-site storage that's actually taking into account the risk of terrorist attacks on not only pools, but also dry casks and doing something about it, which is not the case presently.

THE PRESIDENT: I just want to put some --

MR. KAMPS: Thank you.

THE PRESIDENT: -- context. You gave us a lot of U.S. experience.

Have you visited the Darlington site?
Have you been and seen the pools?

MR. KAMPS: Well, as I mentioned, I did visit the time capsule at the front entrance, but I did --

THE PRESIDENT: Have you seen --

MR. KAMPS: -- want to respond to that point that I should take a CNSC 101 course.

I've been interacting with your agency for the better part of two decades. I am quite familiar with the Canadian Nuclear Safety Commission.

THE PRESIDENT: Have you seen --

MR. KAMPS: And --

THE PRESIDENT: Excuse me. Have you seen the pool -- the pool -- the Canadian pool is very different than most of the American design and the Fukushima design pools. Have you seen the Canadian pools?

MR. KAMPS: President Binder, are you inviting me on a tour? Because I would happily accept your invitation.

THE PRESIDENT: I'm asking you -- I'm asking you a straight question, yes or no. Did you see the Canadian nuclear pools?

MR. KAMPS: The CNSC and the OPG have

never invited me on a tour of the pools, so I'm very thankful to you, President Binder, for inviting me on a tour. And I have my schedule right here. I could make an appointment.

THE PRESIDENT: So before you give some real technical advice, I think it's a good idea for you to go and visit.

Staff, you raise a couple of --

MR. KAMPS: When will this visit take place, President Binder, because I have my calendar open in front of me. I could schedule it right now.

THE PRESIDENT: I'm sure they'll be glad to show you their --

MR. KAMPS: Oh, are they on the line? Because I have my calendar open in front of me. I could schedule it right now.

THE PRESIDENT: Okay. Staff, you just want to talk about terrorism?

MR. FRAPPIER: Yeah. Gerry Frappier, for the record.

I'm not sure whether our intervenor can make it to Darlington or not, but I'm sure he can look up some technical data.

As I mentioned at the beginning, it's very important to take a look at the fuel that comes out of a

CANDU reactor versus the fuel that comes out of other reactors.

So as you mentioned, for PWRs and boiling water reactors, if the fuel coming out of the reactor for quite a while, actually -- if it gets exposed to air, you're going to get a lot of temperature increase to the point where you'll get a runaway oxidation of the zirconium which will lead, basically, to a fire, as he's talking about.

This is not the case with CANDU fuel. So the CANDU fuel, after a very short period of time, even if it's not -- is not cooled with the water, you can get fuel damage, but you will not get the fire that he's talking about.

So it's very, very different hazard level than what he's talking about as far as the American experience goes.

THE PRESIDENT: Okay. Thank you.

Thank you for the intervention.

It's 8 o'clock. You want to do one round of questions?

We'll have to go and retrieve our books from day one.

Five minutes break to retrieve some books.

--- Upon recessing at 7:58 p.m. /

Suspension à 19 h 58

--- Upon resuming at 8:04 p.m. /

Reprise à 20 h 04

THE PRESIDENT: We're trying to be efficient with time, so why don't we start with questions. I don't have the list here, so I'm going to start just in the order of sitting here, starting with you, Dr. McDill.

MEMBER MCDILL: I think I'm going all the way back to --

THE PRESIDENT: Monday morning.

MEMBER MCDILL: Monday morning, yes, which is why the papers were not here.

I want to thank OPG for the organizational structure because my first question is related to that, and ask again the question I asked, I think it was, day one.

So this is OPG's deck H81C. Slide is number 10.

And I'd like to repeat a question I asked on day one now that we have a chart in front of us.

If there is -- and staff can answer as well, obviously.

If somebody makes or has a procedural non-compliance -- I don't mean a non-compliance with a

licence. I mean a non-compliance with a documented procedure. How does OPG respond, how does staff respond, and where in the system is there a double check?

So somebody may make an observation, staff may respond, but who is it -- where is there a -- where is there a naysayer in the group who will question the procedure, the decision that's being made about it?

So someone comes in wearing pink booties instead of blue booties, for the sake of a procedure. What happens?

MR. DUNCAN: Brian Duncan, for the record.

So you know --

MEMBER MCDILL: On the basis of this chart.

MR. DUNCAN: Yeah, okay. Thank you.

Whether someone -- you know, whether someone's working in the refurbishment organization -- a maintainer's working in the refurbishment organization proper or it's a maintainer loaned from my ops and maintenance organization over on rotation to refurb, the expectations for how they conduct their work, their expectations for their use of procedures, the expectations that we have for them around radiation protection, conventional safety, personal protective equipment, all of that is the same.

There's no -- there's not two standards.

So the standard -- you know, the standard across the station, the standard in the execution of the refurb units, the standard in the operation of the other units, what we expect of our people around their human performance is going to be the same. So how do we deal with non-compliances?

You know, there's many layers, as you'd expect.

If an individual is executing a procedure or not meeting a standard as expected, it could range from coaching, hey, you don't have your earplugs in; I expect you to do that, make sure you're wearing them. It could be more significant.

It could ramp up to a position where an individual made a choice not to use a fall arrest harness when they were required to or just chose not to do what our expectations were.

In those cases, we'll go right down the disciplinary process. Those people may not work for us any longer.

So there's a gradient, I guess, depending on the significance or, in some cases, the intent behind a non-compliance.

How do we detect that?

We detect that -- in some cases, individuals will self report. An individual went through a monitor and forgot to check. They'll self report, they'll file a station condition record and they'll report to their line, hey, I did something I shouldn't have, you know, and they'll be right up front from it.

In some cases, the supervisors who are visiting the work sites or supervising the workers themselves will find that things aren't being done the way they should be done, they'll detect it and they'll take a corrective action as appropriate. And again, a station condition record will get written on that.

A nuclear oversight, the international oversight agency does audits. Other organizations audit our behaviour, so we have our own internal oversight organization that looks for compliance to our standards.

We have managers in the field that are looking to ensure that our workforce is meeting our expectations and executing and, in particular, behaving the way we expect them to.

So there's a lot of ways we do observations. We call it an observation and coaching program because a lot of it is observing the workers, observing their behaviours and coaching on them how to be better. But there's quite a variety of ways that we check

on their performance, you know, at different levels and different layers in the organization, and there are independent checks from our own oversight organizations, from our own peer reviews and evaluations that occur to confirm that people are meeting the expectations we've set for them.

THE PRESIDENT: Can I piggyback on this just to sort of try to understand this chart.

And maybe I'm misreading it, but you did highlight that support to refurbishment is coming from the session operation, which I thought is very busy place. I wouldn't have expected them to be preoccupying and supporting the refurbishment, whereas I thought the central-led organization would be the place that would provide support rather than the ongoing operations.

MR. DUNCAN: So Brian Duncan, for the record.

Actually, it's a mixture.

So if you take radiation protection, which is a centre-led function, radiation protection organization will provide specific staff, resources, tools, equipment to support the refurbishment just like they do for my normal operation or just like they do now when I'm in outage -- on a maintenance outage on a unit.

They'll build staff up to execute and

support my needs. They'll do the same for Dietmar's needs.

But if you look at something like station operations, Dietmar and his team will have a core ops and maintenance organization, but remember, when I shut Unit 2 down, the staff that I have, roughly a quarter of my staff, can go with that unit into the refurb and support them.

And there are other times when I will loan support.

A great example of that would be when we start refurbishment. The first three months of refurbishment are essentially defueling the reactor.

That will mean that will be my defueling team that will do that.

We're not going to have a separate defueling team in refurbishment that only lasts for three months and disappears. It'll be my team. I'm training additional staff, about 45 extra defuelers, operation staff, to do that, and I also have built up my maintenance organization so that I can manage all of the -- you know, the activity and the wear and tear on the machines for that period of time.

But it'll be my team that will execute the defuel. Once they're done, they'll roll back into the other maintenance programs and other work that I have around the rest of the station.

So that's what that support to refurbishment line was really meant to represent.

THE PRESIDENT: Dr. McDill?

MEMBER MCDILL: Thank you.

All right. So I'm going to go over now to CNSC.

And you have an inspector who has witnessed this non-compliance of a procedure that OPG has committed to following.

MR. HOWDEN: So Barclay Howden speaking.

I'm just going to give a little intro and then ask one of our on-site inspectors, Suzanne Karkour, to respond.

Just at the high level from a governance and accountability, the expectation is licensee is responsible for safety, so it has to put the accountability mechanisms in. But as you go down to the more granular level, which is, I think, more your question, I think there's sort of two pieces.

And the first is, if something leads to an event or reportable non-compliance that the licensee is aware of, we expect them to report that under 3.1.1. And that's why the self-reporting culture is very important with the licensee.

However, if it's discovered by an

inspector or an inspection team, I'll ask Ms Karkour to talk about our verification process and how we deal with that.

MS KARKOUR: Suzanne Karkour, for the record, Inspector.

So essentially, on site we inspect against OPG's procedures referenced in the Licence Condition Handbook, which are essentially their commitment to the CNSC to comply with the licence condition.

So if we do see a non-compliance to procedure, for example, if I'm in the main control room and I observe an operator not following procedure, I bring that to the attention of management immediately with the expectation that the licensee will take immediate corrective action.

If it's a more systematic issue that we observe, then we have graduated enforcement approach that we take, so we do notify the licensee immediately. We have regular meetings with OPG management to discuss our observations and findings, and we issue enforcement actions.

We have enforcement tools that we use, action notices and reports, directives and, essentially, if there is an immediate health and safety risk to workers, as Dr. Jammal has indicated yesterday, we can, as an

enforcement tool, issue an order.

However, if it's a simple non-compliance to procedure, we do bring it to the attention of the licensee immediately, and they take immediate corrective actions.

So in terms of issuing enforcement action such as action notices and directives, those are used also to track the actions to ensure that the licensee takes corrective actions to ensure closure of the issue. And once the licensee has provided us with the corrective action plan, we continuously monitor to ensure that they are effectively implementing it and that the corrective actions are effective.

THE PRESIDENT: Thanks.

MEMBER MCDILL: So one more in this set.

Where does that notification to management come in to this organizational structure on the refurbishment side?

MR. DUNCAN: You know, the licence will always be held with me in my house because it's all my station. So you know, if we have issues like that where the inspection staff -- if they need to talk to the shift manager, they'll do it directly. If they need to go further up the line, then they'll work with my Director of Ops and Maintenance, my plant manager, and we will make

sure all of our people are held accountable because even the operations or maintenance folks that report to Dietmar, ultimately, they move in and out of my organization.

I'm still responsible to ensure that they're staying authorized, that they're meeting all the requirements of their licence, and so the standards will always come back to me.

MEMBER MCDILL: So it will come in somewhere between refurbishment execution and Darlington refurbishment, Dietmar?

I mean, I'm just trying to figure out how the day to day fits into this. It's a little -- I realize it's very top down, so I'm -- there are branches here that we don't see, and it's somewhere in there. I just wonder where in there, roughly.

MR. DUNCAN: Yeah. So I'll let Dietmar jump in, too, but, you know, I know this is a -- oh, sorry, Brian Duncan, for the record.

I know we've simplified the organization, and that's not really how the operational flow goes day to day, if you will.

Dietmar's team is -- will be responsible for the execution of the work activities in the refurbishment. He'll be -- his team will be responsible for the schedule and the quality of the work.

That team will work to the same standards, though, that everyone else in the station works to, and I'm ultimately accountable for the standards that we expect our people to work to.

But Dietmar, I'll let you jump in as well.

MR. REINER: Dietmar Reiner, for the record.

Again, depending on what the specific event is, if it's something specifically related to, let's say, work that's being executed by a contractor, our requirement is that our contractors have corrective action programs they have got in place, and we validate that they do have that. That they have all of the checks in place around that are defences against procedural non-compliance, pre-job briefs, check sheets, observations, supervisors in the field observing the work.

If there is a non-compliance, we expect that non-compliance to be captured in their corrective action programs. We monitor their corrective action programs.

If it is something that has the potential of transcending across multiple contractors or into OPG, we would capture it in our corrective action program.

If it's an observation from a CNSC inspector, we would get that feedback immediately, we would

act upon it and take corrective action.

So it could happen that -- at really any level from working level right up to management.

THE PRESIDENT: Okay. Monsieur Tolgyesi.

MEMBER TOLGYESI: Merci, monsieur le président.

I have a little bit similar question of organization because when you are looking your schematic H1B, page 3, is the same organizational structure what you have on the slide 10, but when you look at the slide after, we are talking about centre-led organizations.

On the next page, number 4, you have Director, Radiation Safety. And under this gentleman there will be one Pickering radiation safety, Darlington radiation safety, refurbishment radiation safety and each will have its own health physicist because this is how it is now.

MR. REINER: Dietmar Reiner, for the record.

Yeah, that's correct. So the centre-led organization is going to provide that. There's going to be a dedicated health physicist that will be there to support refurbishment.

We'll have a direct line reporting relationship back through the centre-led organization, but

we'll be embedded with the refurbishment team, so their physical work location will be with the refurbishment team at Darlington. But that will be support that is -- so the standards ensuring that qualification is there, that the individuals there are able to do the job, that will be managed through the centre-led organization.

MEMBER TOLGYESI: Because I thought you have -- in each place you have one health physicist because if you have one which is supplying services, eventually who will be his boss? Because if it's a problem there, he will report to who? He will report to Director, Radiation Safety, who will report to Chief Nuclear Officer, who is about those who are responsible for refurbishment and for operations, you know.

There is -- I think there is a kind of loop bypass what could happen.

MR. DUNCAN: Oh, no, no. Sorry. Brian Duncan, for the record.

No, there's no bypassing. So if you take the health physicists that are assigned to the stations today because of the magnitude of the project of a refurb, there is a health physicist assigned to it as well. They report to a Director of Radiation Safety.

The concept with a centre-led organization is that there will be one consistent standard, then, across

the fleet that the governing documents, that the procedures that are used will all be consistent across the fleet. That's the vision with a centre-led like that.

But of course, when you look in the line, there is then a Vice-President over the centre-led organizations that reports to the CNO, so the Chief Nuclear Officer that we -- that Dietmar and I work for, it all lines up so that it is one organization. The Chief Nuclear Officer is in charge of all of those elements.

THE PRESIDENT: Ms Velshi?

MEMBER VELSHI: So I'm going to move from the real nitty-gritty to the really big thing and get to your request for a 13-year licence and the -- well, the argument given was that you want regulatory certainty and consistency in regulatory requirements for the entire refurbishment project.

And I know we've had a couple of intervenors who spoke favourably for that, CNS, CNA, for instance.

And I'm trying to reconcile that with what staff has said what I believe we, as the CNSC have the right of is -- never mind the revoking, but the amending and revising regulatory requirements at any time.

So -- and 13 years is a long period of time.

So how do you reconcile -- or help me reconcile that. You want a common set of regulatory requirements, I believe, by having a 13-year licence, but it's a very dynamic picture. Regulatory requirements can change any time, whether it's over a year, 13 or 5 years.

MR. DUNCAN: Brian Duncan, for the record.

You know when we look at a project like this one, re-licensing, and the effort that goes into the re-licensing process, becomes much more difficult when I would have some units in one condition of refurb, some partway through, some not yet done, and to then represent all those various states of the union and to be able to characterize that and move forward. And in licence hearings there are often changes that are introduced that are different than the evolution, if you will, of regulatory requirements.

It's true, regulatory requirements do evolve with time. We do, all of us, learn from the industries and from experience elsewhere, and we adapt and we work with those changes. But for us, as we plan a project, we want to focus, and really focus our attention, on this big evolution so that we start with one model of a licence framework, if you will. We'd like to carry that model through as we execute the other refurbishments so that it's a consistent approach from the beginning to the

end.

Does that mean that they're won't be changes to reg docs or new reg docs issued? No. You know history would suggest that there'll be evolution or there'll be new documents introduced, and we'll manage those as they come along.

And, of course, the Staff and the Commission always have the right. If they believe there's something, whether it's something that's happened in the world or whether there's some need to change the requirements, that can always be managed.

But, again, we just look at when you're planning a project of this size, and your capability to see it through from start to end, to have a consistent, or as consistent as we can, a framework would be very beneficial for us.

MEMBER VELSHI: So I'm going to get input from Staff on this.

Help me with a very specific example, then? Take three years. If you had a three-year licence as opposed to a 13-year licence, what is it that the three-year licence would -- other than your effort in putting together a licence submission, what is it that the three-year licence would do that would constrain how you execute your project that a 13-year wouldn't?

MR. DUNCAN: Brian Duncan, for the record.

You know, I'm not sure -- I'm not so sure I could say what would a -- you know, what would a variety of intervals do. It's the outcomes of those reviews. It's the potential that in a three-year time period we'll be two years into the refurbishment.

If there was a significant shift in standards or expectations as a result of a hearing, then we'd be partway through a project and having to refocus on how we'd manage that shift or how that shift could influence what we were going to do with the next unit, and that's a -- and, I mean, that's hard to predict and it's hard to say how that would look.

But that's the risk that we would see: is that it could potentially -- we're developing a pattern, a model, if you will, for that first one, we're learning as we execute that first one, and we're learning to be more efficient and work safer or work better, and then take that pattern and replicate it on the next, and if you shift that pattern partway through then there's the potential then you're in a position where, ah, gee, have we got the full benefit of everything we've learned? Are we now doing some things a little bit different in a regulatory framework or an execution framework?

And what would the outcome of that be? I

can't predict what that outcome would be. I can predict it'd be a challenge, though.

THE PRESIDENT: Can I ask, we're both in government, and I know how government operates, so is -- I mean you develop a plan for 13 years. Do you want the government to book on their books a commitment for 13 years? I could see that as a big driver to your board of directors, et cetera, but I don't see the significance, as Ms Velshi alluded to, between 5, 10, 13, because you will appear in front of us every year and you can ask for an extension every year, et cetera, et cetera.

So I just want to understand where the pressure is on this 13 versus 10 versus 5.

MR. DUNCAN: Yeah. So I guess in answer to the first question, if I could convince the shareholder to book us for 13 years, we would.

You know --

THE PRESIDENT: They don't really book, they just put in the "fisc", as we call it in Ottawa. It's in the books in the background. There's a number put away just in case everything is going well and it's required.

MR. DUNCAN: Yeah -- Brian Duncan, for the record -- I understand.

You know, it's important to us that we plan this project, and we've put so much effort into that

planning to have that clear line of sight. Of course we're going to report back to the Commission, as we always do every year. Of course, we're going to, as we've committed to, report back after the execution of the first unit on what we learned, what we're going to do different, how it went, what the safety report results are. And of course there'll be many opportunities then for consultation and for feedback and comments.

But, you know, it's that certainty. It's having a framework that says, okay, we understand what the rules are, we understand what we have to do to be successful. That's so important to us.

Now I know Ms Laurie Swami would like to jump in here. Let me give her a moment as well.

MS SWAMI: Laurie Swami, for the record.

I think if we go back to the question about three years versus five years versus 10 years versus 13 years, what OPG has done is we have implemented the REGDOC-360 for refurbishment, which included completing a periodic safety review for the facility. We looked at the condition of the plant, we looked at modern codes and standards, we did our assessment against that, and we developed the ISR, and eventually the integrated implementation plan.

That forms the basis of this licence that

we're looking for now: is the IIP, which will span 13 years of work that we have in front of us, that's based on all of the work that we've done over the last number of years, including the environmental assessment and all of the studies, to come up with what is the plan of work that we have?

So that's part of our licence application now, and it's why we see the need to go for 13 years. If, on the other hand, we said, "Well, we'll come back in three years with another licence application," I'm not sure what we would say to the Commission in terms of what would we be seeking approval for, because we have already laid out our plan for 13 years.

So we would go through another hearing like this one where we would answer to, "Well, is that still the plan that you want to do?" From OPG's perspective, we've set our plan and we would like to move along and finish that plan before we go through another PSR and another set of new actions that we would have to address at Darlington.

So that's the plan that we've set out for ourselves, and that's why we think the 13-year licence makes the most sense for us. It's that PSR basis that is now part of the regulatory framework under your regulatory guidance, and so we think we're meeting that, and that's

why we think it's important to move to that new framework.

MEMBER VELSHI: No, thank you for that. I'm trying to understand how a 13-year licence will constrain the CNSC is carrying its work out.

So if you were to fast-forward eight years in the 13-year licence, some of the units that have been refurbished are now operating. So I'm just thinking of right now we have a five-year licence -- or say it's five years -- and you still come ahead and say, "Hey, we want another five-year licence." So that's independent of the ISR. Now you've got operating units.

And it's not as though the regulator comes and, you know, arbitrarily sets requirements. There's a whole process for doing so.

So I'm just trying to get to it. It's not, "Hey, we want you to redo the ISR." It's just trying to see what are -- how would you be constrained with a shorter licence? How would the CNSC be constrained with a shorter licence?

And I'm going to leave the public engagement out, because that's a separate issue. I just wanted to understand from a requirements perspective.

So, Staff, over to you.

MR. HOWDEN: Yeah. Barclay Howden speaking.

Mr. Jammal is going to start off to frame it, and then I'm going to talk more about the ISR, and how it might fit within any type of licence period.

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

I fully understand your question on the constraint to the CNSC, but I'd like to start with the fact that the licensing term is not a regulatory tool. So I want to set the record straight from that perspective. As you correctly mentioned, our actions will render the licensee at any time before the Commission, and licensing actions can be taken accordingly.

Now with respect to the public engagement, I got your direction. You do not want to talk about it, which is fair. However, for the resources perspective, as they are embarking on refurbishment activity, for a re-licensing process, ISR or not, on average, when we are before you, for example today the work started roughly a year-and-a-half ago -- this is for re-licensing. I'm not talking about the ISR review or anything of that form.

So the 10-year licence, the establishment of the IIP, once approved by you, the Commission, it becomes that safety case that will be valid for 10 years. And as you correctly mentioned, if there are changes the process kicks in with respect to the amendments

accordingly, and how they are being -- our regulation is a performance-based regulation, so the safety case is established by the IIP for the refurbishment of the facility. So globally it's a site-wide IIP, and from our perspective we selected the 10-year in order to fit into the PSR process as the PSR is established as site-wise PSR for the next phase of the licensing.

But from a resource perspective, I will not call it a constraint, I will call it an allocation of resources. It doesn't need to be at that point reallocated for the area licensing process. That's the key point. I'd rather have -- I mean putting it directly, we'd rather have increased resources on site with dedicated inspectors in order to address the refurbishment requirement from an inspections perspective and programmatic element because we need to keep that balance in place.

MEMBER VELSHI: I totally understand the resource part. Mine was around regulatory certainty, and how does one give more than the other?

Thank you.

MR. HOWDEN: Madam Velshi, can I just add a bit more that I think might help with the regulatory certainty question that keeps coming up?

So in line with what Mr. Jammal has said, I think it's just important to be on the record that, from

Staff's view, for a refurb --refurbishment and continued operation, if that is going to occur the Commission needs to consider the ISR, integrated implementation plan, and if accepted it needs to be implemented regardless of the licence term. The ISR we consider to be the periodic safety review, the PSR. And as you're aware there's the four steps to go through a PSR: the basis, the technical assessment, global assessment and IIP. We've presented 10 years based on the PSR international benchmark.

Now in terms of revising regulatory requirements, when we talk about what could change during a period, it's codes, standards and practices. And I think the codes and standards are quite important to look at because these really guide the physical design work that's going to impact the refurbishment.

These may change, but likely you would choose not to implement them right away because the design work is already done to code, the equipment is being purchased, and things are being implemented. So you'd really look at that. And I think the worry is the code effective date will likely change during the period, but it's a question of whether you would force a redesign.

But the third part of regulatory requirements is the practices, which tend to fall into that programmatic area, and I think those are going to change,

and they're going to have to be implemented. We talked about cyber security today, the new CSA standard. I would not be surprised in the next five years there's going to be an update to that, and I think it's essential for ongoing safety that that be considered.

So as Mr. Jammal said, the periodic safety review produces a site-wide integrated implementation plan, but it needs to take into account the current status of any of the units. So from our view, we would not expect the IIP, under the ISR, for units undergoing refurbishment or about to be refurbished to be changed, certainly from the design side. And that's assuming that the thing unfolds as planned, the refurbishment.

We also understand OPG's concern about potentially two IIPs in play: the ISR and a new PSR. That is not the intent. There should always be a single site-wide IIP under implementation, and that's the goal of the PSR. You don't want to have two improvement plans, so if you had to do something you would them to be blended together into a single site-wide plan.

So we do see some flexibility in an implementation of the PSR. And our view was that, let's say, regardless of licence term, before 10 years comes up we expect OPG to start the next PSR. And as a minimum we would want them to come forward with their basis document

to say, "Here's the codes, standards and practices that we're going to measure these plants" -- you know some just refurbished, some refurbished and operating for a few years, some that they would be measured against -- and this would allow it to be considered. If it was at a 10-year licence hearing, that's when it would come forward.

But we also expect that for the next PSR, the integrated implementation plan, regardless of when that occurs, would be held in a public proceeding of the Commission to consider sort of the next plan that goes forward, similar to what we're doing today.

So just trying to give you an idea of sort of the strategy that's in our minds at this moment in time.

MEMBER VELSHI: So very, very helpful.

So if the refurbishment was delayed, for whatever reason, post-13 years, then the expectation according to what you have said is they would still work on the PSR, integrate the current ISR -- so there's still just one IIP, but that needs to get revised in whatever the 10-year timeframe?

MR. HOWDEN: That is correct.

The other variable would be: let's say refurbishment did not go according to plan, and the province wanted OPG to take an off-ramp, our expectation would be probably the first unit would get refurbished

because Bruce 1 and 2 and Point Lepreau have been successful. But let's say they just did one, then they would have to do a PSR to apply to that, but then would have to start looking at end-of-operation strategies, which would invoke a PSR-type process, to allow it to go forward. And we did that with NRU, as you're aware. Even though they were only going to operate for five to seven years, we had them look out 10 years.

THE PRESIDENT: Thank you.

Dr. Barriault.

MEMBER BARRIAULT: Thank you, Mr.

Chairman.

I'd like to be very naïve and think outside the box here, if that's okay. And I would say, "You want a licence for how long? Five years? Ten years? Twenty years? No problems. But every year, every two years, you will have to have, call it what you want, a retest to make sure that things are working as they should."

You know, if you want to do PSRs, that's fine, too, you know. Same as when you drive a car, you know every year you have to get it inspected, at least we do in New Brunswick, you know, even though you have a driver's licence.

So I think the duration of a licence, for

me, is not that important. What is important to me is that we can not only prove to ourselves, but prove to the public that they have input, they can meet, discuss, make presentations, intervene, whatever they want to. But, as I say, every year, every two years, sorry, but you have to have a retest. It's that simple. So it's a simple approach.

But that was only my first question, and half of it was taken up, so I'll go on from there.

My next question, really, is to OPG. We all know that, you know, over this next year that this country will have pot on demand. Marijuana, cannabis, call it what you want. I've got serious concerns about that, I really do, but maybe it's because of my background.

But we know in Colorado the incidents of accidents has almost doubled since they brought it in. You know, what would you do to manage this issue? We know that the age group of use and abuse is in the 25-30 age, which is your workforce really. So I'd like to know what kind of system you're going to have in place to manage fitness for duty.

THE PRESIDENT: I think Staff should get ready to answer that question, too.

MEMBER BARRIAULT: They will after. One at a time.

THE PRESIDENT: No, because there's a big document coming up on --

MEMBER BARRIAULT: Okay, yeah. Fitness for Duty? Okay. Good.

MR. DUNCAN: Okay. Brian Duncan for the record. I'll start, and then I know Ms Swami wants to jump in.

You know, fundamentally, we have a fitness for duty requirement at all times, and we have a continuous behaviour observation program to look -- you know today. Today we're mostly looking for individuals who are abusing alcohol, for example, or are unfit because they haven't had enough sleep, or things of that nature. So going forward, you know, our think that our fitness for duty and our observation programs will have to evolve with the times, if that comes to pass, where we'll have to do specific training with staff.

And, again, the way we do that is we observe what routine behaviour looks like for individuals, and we look for deviations, if you will, from that behaviour so that we can take action.

In the long run I don't think whether a persons fit for duty or unfit for this reason or that reason, at the end of the day how we look for it, how we monitor behaviour, will be likely very similar.

But I'll let Laurie talk about this as well.

MS SWAMI: Laurie Swami, for the record.

I would just add a few points. OPG has a zero tolerance policy for drug and alcohol use, obviously, at work. And, as Mr. Duncan had described, the program that we have in place for observing our employees would include our security officers as employees enter the facility are also trained to recognize conditions that would suggest that someone is not fit for duty.

We do have alcohol and drug testing programs for cause, as you would see in any workplace.

So those programs are already in place for our facilities, and we use them, as part of our review, to make sure that we're meeting the zero-tolerance policy.

MEMBER BARRIAULT: But how do you determine that you have zero tolerance, really? How will you know if somebody has had a joint, for example? You know, I know you're observing, you're watching them, whatever, I guess the concern I have is at what point do you detect this? I mean is the person partially impaired before or only after they've, you know, taken so much?

The concern I have is that, you know, if you have zero tolerance, then you have to have a system of testing. If you have to have a system for testing, now you

can do it for cause. But, you know, I honestly think that when it becomes legal, you know, to smoke marijuana, then we're going to have problems, because I don't think there's any way you control it, really, without testing.

In the U.S. for example, truck drivers right now, the minute you cross the border, you're tested, okay? Give me the bottle.

THE PRESIDENT: Okay, Staff, I think it's time for you to jump right in.

MEMBER BARRIAULT: Okay. I'm sorry.

THE PRESIDENT: Go ahead, please.

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

I'll pass it on to our colleague, Kathleen, in a minute, but you asked one question with respect to the testing and the public intervention.

I would like to share with the Commission. Unfortunately, the intervenors are not in the room, such as CELA or Greenpeace or who are going to appear before you.

We fully agree with you, Dr. Barriault, that testing is required, and the testing is required on a yearly basis. The engagement of the public, just from my discussions with them, they said, and I'm not telling the Commission what to do, nor the secretariat here, but the belief of the re-licensing and the opportunity for an oral

intervention is important to the intervenors and the public.

So this is where they see the difference between the written intervention and an oral intervention. But the Commission will have to take all these things into consideration because the testing is -- we do refurbishment inspection, that is now testing the programs that you will be approving if you approve at the IIP and then we have to report back publicly about it.

So the public proceedings of the Commission will be around, according to the rules of procedure, as the Commission sees it fit.

So we fully agree that the testing will be continuous, but I will pass it on to --

MEMBER BARRIAULT: Okay. The testing we're talking about here is --

MR. JAMMAL: For drug testing. But I thought the testing with respect to --

THE PRESIDENT: Okay. So you changed gears on us twice and you really confused us with the testing.

MR. JAMMAL: Okay.

MEMBER BARRIAULT: My question is --

THE PRESIDENT: Go into fitness for service now, please.

MR. JAMMAL: Fitness for duty, we'll go for fitness for duty. Fitness for service is technical, so...

MS HEPPELL-MASYS: Kathleen Heppell-Masys, Director General of Safety Management Directorate.

So, Dr. Barriault, to answer your question, we are --

MEMBER BARRIAULT: I'm sorry, can I get you just to speak a little closer to the mic?

MS HEPPELL-MASYS: So CNSC is very engaged in terms of on the file, the fitness for duty. Certainly we know that OPG has measures in place already to address fitness for duty and impairment caused perhaps by fatigue.

You probably likely know that we have also currently under consultation, public consultation, a REGDOC on fatigue management and hours of work, it's currently in the public for consultation.

And as of Monday, on the 9th of November, we'll have a new document for consultation, and this one will be fitness for duty. And we'll address potential issues related to impairment caused by drugs and alcohol. And we'll focus on a range of testing throughout many phases of, for example, pre-employment, for-cause, and so on.

So we'll be prepared to face, similar to

alcohol, any legalizations of whatever. It won't affect this industry because we'll have all the measures in place no matter what.

MEMBER BARRIAULT: Thank you. So I guess that begs the question from OPG, are you prepared to get involved in this program really with substance abuse testing rather than just on demand? At least I don't think it's going to be on demand, is it?

THE PRESIDENT: We get a straight answer, the answer is there are going to be random tests, they're going to be tested --

MEMBER BARRIAULT: For cause?

THE PRESIDENT: -- and that's going to be a regulatory requirement. Not for cause.

MEMBER BARRIAULT: Okay.

THE PRESIDENT: Random testing for critical positions. We are consulting on this, this is coming up. And the industry, if this becomes a regulatory document, they must oblige.

MEMBER BARRIAULT: But I think it will be welcomed by industry, maybe I'm wrong.

THE PRESIDENT: No, that's going to be hotly contested. But we'll see how it works, where it'll end up.

MR. DUNCAN: Brian Duncan, for the record.

There are legislative barriers today that prevent me from doing the kind of testing that other facilities in North America would do.

Every time I've ever visited a U.S. power plant I'm randomly tested, and I'm not surprised by that. I don't have that capability here. So what we do, we have a robust fitness for duty, we have a robust behaviour observation. But we do not have the capability today to do random testing. I can do that for cause, and I will and I have, but I would need --

MEMBER BARRIAULT: You can also do it pre-employment.

MR. DUNCAN: Yeah.

MEMBER BARRIAULT: I'm sorry.

MR. DUNCAN: There's specific cases, yes.

THE PRESIDENT: Okay, thank you.

Mr. Harvey?

MEMBER HARVEY: Merci, monsieur le président.

You are asking the same thing about the designation authority for the hold points. My question, is to take a decision for those points you've got to receive certain documentation, certain reports. It takes time, it takes days, weeks, and sometimes months. The experience shows that it's not always easy. And those authorizations

are on the critical path I suppose of the completion of the refurbishment.

So the question is to what extent is that work could have an impact on the critical path of the OPG? Have you an example of what it has been for Point Lepreau and Bruce and...?

THE PRESIDENT: Can we get clarity here? Are you talking about hold point on return to service?

MEMBER HARVEY: All hold points.

THE PRESIDENT: Those are not hold points, I think those are the graph... Are you talking about the hold point on return to service?

MEMBER HARVEY: Yes, yes.

THE PRESIDENT: Okay, sorry. I thought you were talking about the 5-year...

MEMBER HARVEY: No, no.

THE PRESIDENT: Okay.

MEMBER HARVEY: It'll be four times to do that job, for each unit.

That's on the presentation of -- this is the OPG -- no, no, is it OPG? CNSC, the presentation on page 6.

MR. HOWDEN: Barclay Howden speaking.

I'm going to ask Francois Rinfret to walk through the process that Staff would take. And then I

would ask Mr. Jammal to close it out, because we're recommending that he be the decision maker, and he's made these decisions before, and he can give you a sense for the diligence that he does as a decision maker. And Mr. Rinfret can walk through the diligence that we take as the recommenders.

MR. RINFRET: Thank you, Mr. Howden.

The CNSC Staff have, as you know, completed this return to service after refurbishment of Point Lepreau, the one unit there, and the two units at Bruce.

The basis for return to service were first that the obligations are linked to the Integrated Implementation Plan, were completed for the various phases of it. Compulsory work, safety-related work, and then completion of the normal return to service for any return to service of a reactor, ensuring that the systems are returned to service properly, have been commissioned, that the testing shows their availability, and therefore to have an all systems go approach before.

There are four hold points that represent stages of return to service. These are aligned to various elements of the completion of the Integrated Implementation Plan and the testing, and then the commissioning of these systems.

So the idea there is to be able to have a system where all of these activities are ticked off with either a review of documentation provided and/or a combination of inspections in the field and witnessing of activities in the plant as well. So it's a combination of all those would be completed before presenting a case for removal at the corresponding hold point, the first one being the fuel loading.

MEMBER HARVEY: How does it work? If OPG thinks the work is completed -- so I suppose you have followed before the activities, and when you get to that point, how long -- take the example of Point Lepreau, how long it takes for the Staff, for the decider here to take the decision?

MR. RINFRET: Francois Rinfret, for the record.

The return to service strategy is already in the works for being delivered and being understood for the licensee. Coupled with that would be the CNSC making its necessary planned activities to be in line for and not to be necessarily in the critical path of return to service.

But it could happen, it has happened before, certain delays because the licensee was not able to provide necessary assurance, and the licensee has

understood that in the past and has been able to complete its work before requesting authorization to remove a hold point through our delegated request to our Executive Vice-President.

MEMBER HARVEY: Is it the same approach for each one of the four hold points?

MR. RINFRET: Yes. Exactly the same approach, the same format, a predictable format that we have seen through the last two refurbishments. A predictable format for the Executive Vice-President as well. He knows exactly how we will receive, what he will receive --

MEMBER HARVEY: Just to have an idea, is this a question of days, of weeks --

MR. RINFRET: Oh, in some cases it's a few days between some of these hold points. The licensee is very aware of that and, because of this, wants to be able to -- even though an activity might not have to be done before the last hold point, the licensee, and we'll be talking about that in terms of effectiveness and efficiency, wants to front load the IIP compliance and also the commissioning as early as possible, not to get entangled in any critical path.

So that will be the same story as has been done before with the other refurbishment units.

MEMBER HARVEY: You haven't received any complaints from Point Lepreau or Bruce --

MR. RINFRET: No. We've been -- I think there's been a good alignment between the organizations. It's just a matter of having proper resources in place at the right time for the right measure.

MEMBER HARVEY: Does that increase the workload of the CNSC Staff on the side?

MR. JAMMAL: Ramzi Jammal, for the record. If you allow me, thanks. I'll just describe the process.

You asked the question, are we going to be on the critical path? The only time we get on the critical path is when the licensee is not meeting our requirements. So I'll set that record straight.

With respect to the hold points and the process I established to remove the hold points as it was delegated by the Commission, it's the clarity with respect to requirements already established in place. So the licensee knows what is our requirements and what they need to do in order to fulfill our requirements.

Our inspectors on site, what they do is they have the -- as my colleague Suzanne Karkour mentioned, they have the list of requirements that they will have to go through, and they do inspect on site the results of the

testing. For example, the hypothetical, shutdown system 1 must activate in so many seconds or a fraction of a second. Our inspectors will be present and determine is it meeting that requirement?

If it does not meet the requirements, the licensee already knows it's not meeting the requirements, so hence the inspector's verification will say it does not meet requirements so it does not get accepted.

Now, let's move on to the environment. When I get the information, so our inspection plan and the removal of the hold point is matching the licensee's plan, because we have to inspect in parallel everything that is going.

So when it comes for me the decision, you're asking a very valid question, do I sit in my office for a month just contemplating? No, I'm just being a bit cynical I guess myself. The answer is no. Once we get the information from Staff, on average I have been making a decision based on if I have enough information I render the decision. Well then, on average, within the week that the proposal comes in.

And I tell you, a lot of times Staff -- I do request additional information as I review the documents and the results of the compliance activity. But I want to put it back in perspective. My approval is from the risk

perspective and a decision making perspective is way lower than what the Commission will establish. So I am consolidating the compliance verification that is conducted by our inspectors.

Once the inspector in the site office -- as a matter of fact, even the Director and the DG will have to sign off on these evaluations and compliance findings before I accept anything else. So it's got to go through the channel. And it is planned activity in parallel to the activity of the licensee.

And the requirements are clear. I already established, as part of their commission testing, that they must meet that requirement. Because you approve the IIP and we're holding them to meet those requirements. So it's a consolidation of compliance activity. And if I'm not satisfied, I let them know right away so that they're able to plan the activity accordingly.

THE PRESIDENT: Right. But this is done particularly on a monthly basis, every time there's a shutdown. The only difference here is it's new refurbishment machine, new fuel.

But getting to full power and 35 per cent is routine, isn't it?

MR. JAMMAL: Ramzi Jammal, for the record. You are correct. It's the -- when they

come from return to service. I mean, we speak of return to service from a major outage. For example, they are carrying out a vacuum building outage. Before they go back they have to meet the requirements with respect to testing.

The refurbishment is just more expanded from what we currently do. And that's what -- I'm not trying to render it -- *je ne veux pas le banaliser* -- I do not want to render it routine, but we always apply it and it's compliance activity that comes from the site --

THE PRESIDENT: Okay. I just want clarification on the same thing. On your regulatory hold point for return to service, this is your supplementary, on page 2. So I thought I understood all of this until you came up with Phase A, Phase B, Phase C, Phase D, and then Hold Point 1, Hold Point 2, Hold Point 3, Hold Point 4.

Are they different? You found the spot? Are Phase A, B, C, D, the same as 1, 2, 3, 4?

MR. RICHARDSON: Ross Richardson, for the record.

You're correct. We've selected the hold points to mark the completion of each phase of commissioning, if that makes sense.

So our first hold point marks the completion of Phase A, second Phase B, et cetera.

THE PRESIDENT: I didn't understand that,

so that's good. Thank you for the clarification.

I think we overstayed our welcome here. I think that we should stop here and resume tomorrow at 8:30. And hopefully we gained an hour here by first round of questions, but I'm not sure it's the last round of questions, so bear with us.

We'll see you tomorrow at 8:30. Thank you.

--- Whereupon the hearing adjourned at 9:06 p.m., to resume on Thursday, November 5, 2015 at 8:30 a.m. /
L'audience est ajournée à 21 h 06 pour reprendre le jeudi 5 novembre 2015 à 8 h 30