

**Canadian Nuclear
Safety Commission**

**Commission canadienne de
sûreté nucléaire**

Public hearing

Audience publique

May 28th, 2018

Le 28 mai 2018

TownePlace Suites Marriott,
Highland Conference Room,
19 Millenium Way,
Kincardine, Ontario

TownePlace Suites Marriott
salle de conférence Highland
19, Millenium Way
Kincardine (Ontario)

Commission Members present

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Ms Rumina Velshi
Dr. Sandor Demeter
Ms Kathy Penney
Mr. Timothy Berube

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M^{me} Rumina Velshi
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Secretary:

Secrétaire:

Mr. Marc Leblanc

M. Marc Leblanc

General Counsel:

Avocate générale :

Ms Lisa Thiele

M^e Lisa Thiele

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Kincardine, Ontario / Kincardine (Ontario)

--- Upon commencing on Monday, May 28, 2018 at 6:31 p.m. /

L'audience débute le lundi 28 mai 2018 à 18 h 31

Opening Remarks

M. LEBLANC : Rebonsoir, Mesdames et Messieurs. Bienvenue à cette audience publique de la Commission canadienne de sûreté nucléaire.

The Canadian Nuclear Safety Commission is about to start Part 2 of the public hearing on the application by Bruce Power for the renewal of the Nuclear Power Reactor Operating Licence for the Bruce A and B Nuclear Generating Stations.

During today's business, we have simultaneous interpretation.

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

We would ask that you 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 proceeding is being video webcast live and that the proceeding is also archived on our website for a

three-month period after the closure of the hearing. The transcripts should be available on our website in about two weeks.

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, va présider l'audience publique d'aujourd'hui.

Mr. President...?

LE PRÉSIDENT : Merci, Marc.

Good evening and welcome to the public hearing of the Canadian Nuclear Safety Commission.

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

I would like to begin by recognizing that we are holding this public hearing in Indigenous Traditional Territory.

Je souhaite la bienvenue aux gens ici présents, and welcome to those joining us via the webcast.

First of all, let me on behalf of the Commission tell you how delighted we are to be here today.

We enjoy any excuse to get out of Ottawa and I would like to thank the hotel and the hospitality we got from the Marriott Hotel for setting us up in this lovely facility.

I would like to start by introducing the Commissioners that are here with us today.

On my right are Dr. Sandor Demeter and Ms Kathy Penney. On my left are Mr. Timothy Berube and Ms Rumina Velshi.

We have heard already from our Secretary Marc Leblanc. We also have Ms Lisa Thiele, Senior General Counsel to the Commission, with us here today on the podium.

CMD 18-H7.B

Adoption of Agenda

THE PRESIDENT: So with this information, I would now like to call for the adoption of the agenda by the Commission Members, as outlined in Commission Member Document 18-H7.B.

Do we have concurrence?

So for the record, the agenda is adopted.

Prior to starting the hearing a traditional knowledge keeper from the Saugeen Ojibway Nation has kindly accepted to grace our proceeding with

opening remarks and prayer.

Chi Nimkii, if you're available, please.

CHI NIMKII: Bonjour.

--- Speaking in Anishinaabe

Everyone, I just spoke in the Anishinaabe language, the languages that have always been here for thousands and thousands of years. That's the language of our ancestors that have always lived in this territory. One of the things that I want to share in opening remarks is in the language for the Anishinaabe people.

--- Speaking in Anishinaabe

The Creator put the Anishinaabe here along with the gift of spirituality.

--- Speaking in Anishinaabe

The Creator gave us four of those responsibilities, and he put us here on this earth to look after them. Those four elements are the earth, the fire, wind, and air.

Very very simple laws: Gitche Manitou and Noknagawin, those spiritual laws, those responsibilities our people have always understood. What I mean by that is that the Anishinaabe people have always looked after the earth, always looked after the water, the air, before our own selfishness,

before our own greed.

Spirit is missing in a lot of our lives, that spiritual connection, and we look for things to try and fill that void. We're always trying, we're always hungry. We're always trying, we're always trying to feed that, we're always taking and taking until the earth is no more, the water is no more, the air, everything.

We're all in this together. It's not to blame one race of people. We're all in this together. Natural law will always supersede any manmade law. There's no habeas corpus in natural law. That natural law governs everything. We are half land and half spirit. We come from the earth, we belong to the earth, we don't own that earth, she looks after us.

It's really important to remember that for our children, our great-great-grandchildren, because we have the responsibilities of life in our hands, in the decisions that we'll be making. Even with our own leaders it's very important to remember that.

Our ancestors have always known these times were coming. Our scientists, our medicine people, our spiritual leaders have spoke about these

times, I've heard them in our ceremonies. I've heard them speak about the things that are happening today in the world.

Indigenous knowledge has always looked after the earth. Western science is new in this day and age, and has done a lot of damage to the earth in a little bit of time. Whereas, our have always looked after everything for thousands of years.

So it's really important to hear what our people have to say. I believe there's some young people that will be doing a presentation. I just ask that you keep an open mind, an open heart and to hear that, to hear that voice, to hear that in your hearts. Because a lot of the times we just operate from our minds. We just operate up here, we forget about the heart, we forget about the spirit.

That's what I was talking about earlier, that void. That void is what's missing in a lot of people's lives today, and that emptiness, that loneliness.

But I just thank you for listening. I didn't come here to give anybody crap or anything like that, but to share. You know, just to share a little bit about our people, because that's just a tiny bit of who we are and our understanding. Because our

people are like scientists, we observe nature, we observe the stars, we observe everything. Then it's important to listen to them, to those elders that might come speak or even the young people who will come share those messages in the next couple days.

So I'll end it right there and I thank you for allowing me to come share and to come speak.

I welcome you to our territory here. Meegwetch.

MR. LEBLANC: Thank you, again, for honouring this proceeding.

This is Part 2 of the public hearing. The first part of the public hearing on this application was held on March 14, 2018 in Ottawa. The Notice of Public Hearing 2018-H-02 was published on September 1, 2017, and two revisions were posted to announce the location and the addition of May 28 and 29 to the agenda.

Presentations were made on Part 1 of the hearing by the applicant, Bruce Power, under Commission Member Documents (CMDs) 18-H4 and 18-H4.1A, and by Commission Staff under CMD 18-H4 and 18-H4.A.

The public was invited to participate either by oral presentation or written submission. April 16 was the deadline set for filing by

intervenors. The Commission received 149 requests for intervention.

The Commission also permitted the entering into the record, on an exceptional basis, of an anonymous letter as CMD 18-H4.150. As it is anonymous, it is not an intervention but the Commission may address it, as and when appropriate.

May 16 was the deadline for filing of supplementary information. I note that presentations and supplementary written submissions have been filed by CNSC staff, Bruce Power, as well as several intervenors.

Participant funding was available to intervenors to prepare for and participate in this public hearing. Eight groups or individuals are receiving funding. The funding decision made by an independent Funding Review Committee is available on the CNSC Web site. All of the submissions are available on CNSC website as well.

To support the CNSC's efforts in being an environmentally responsible organization, paper copies of the submissions are no longer distributed, as they are now available electronically on the website.

So to give you a sense of how we will

proceed in the next four days, we will first hear this evening the presentations by Bruce Power and CNSC Staff. After that, we will hear the presentations from three intervenors following the order listed on the revised agenda.

Time permitting, the Commission will also review written submissions at the end of each day or, if there's a break between two oral interventions, because there is time, we will also deal with the almost 100 written submissions. These written submissions have already been read by the members and we will address each of them before the close of the hearing.

Fifty-eight intervenors are scheduled to present orally this week. While the presentations are limited to 10 minutes, Commission members will have the opportunity to ask questions after each presentation. No time limit has been ascribed for the question periods.

Your key contact persons will be Ms Louise Levert and Ms Johanne Villeneuve from the Secretariat staff, they're at the back at our reception desk, and you'll see them going around or at the reception table if you need information regarding the timing of presentations, and any other logistical

considerations.

Mr. President.

THE PRESIDENT: Thank you, Marc.

I'd like to start this hearing with a few additional introductory remarks. We are in Kincardine the next four days to consider the written submissions and oral presentations from Bruce Power CNSC Staff and a large number of citizens and organizations who wish to express their opinions in the context of the Bruce Nuclear Generating Station A and B operating licence renewal hearing.

I would like to clarify a few things prior to getting this hearing underway. First of all, I would like to emphasize that the Commission is a quasi judicial administrative tribunal that, consequently, it is independent from any political, government or private sector influence. In fact, each Commission member is independent of one another and also independent of CNSC Staff.

Interventions filed for this hearing include recommendation to the Commission. CNSC Staff also make recommendations to the Commission, but it is the Commission members who will render a decision based on all the evidence presented in the context of the hearing process.

The Commission Members are appointed on the basis of their achievements in their respective fields of endeavour as well as their excellent reputation among their peers. Their mandate is simple; ensure that the use of nuclear is done in a manner that protects the environment as well as the health, safety and security of the workers and the public.

I'd like to emphasize that the CNSC has no economic mandate, and will not base its decision on the economic impact of the facility.

I will repeat it. It is the health, safety and security of the public and the protection of the environment that guides its decision.

Finally, as I stated earlier, the Commission is an administrative tribunal. It is willing to conduct this hearing in or near the affected community and to provide a forum where members of the public can express their views on the matter at hand.

As the Commission is a tribunal and wishes to hear all oral presentation, consider all written interventions and ask as many questions as it deems necessary on these issues, we ask that everyone respect the decorum of a tribunal's setting and assist

with the orderly, civil and respectful conduct of these proceedings. The Commission will not tolerate inappropriate behaviour, and will take measures necessary to ensure the orderly conduct of this proceeding in the same way it does for all other proceedings it conducts in Ottawa and in other communities.

Finally, I'd like to apologize for the use of this podium. We're sort of up here, and it's not a sign of disrespect but it's, rather, a means to ensure that everyone can see us, and particularly those that can see us via webcast. So it's the broadcasting people who make us do it.

So thank you for your understanding.

So with these early remarks, I'd like now to -- I'd like to inform you that there are representatives from many departments such as -- and we'll introduce them as they come forth.

We have representatives from Environment and Climate Change Canada. We have people from Fisheries and Oceans Canada.

We have also representative from Health Canada, Office of the Fire Marshal and Emergency Management, Ontario Ministry of Environment and Climate Change, and Ontario Ministry of Natural

Resources and Forestry.

So all of you attending this, thank you for participating.

We finally get going, so let's turn the floor to Bruce Power for their presentation as outlined in CM 18-H4.1B and H4.1C and H4.1D.

I understand that Mr. Rencheck, you'll make the presentation.

MR. RENCHECK: Yes.

THE PRESIDENT: The floor is yours.

CMD 18-H4.1B/18-H4.1C/18-H4.1D

Oral presentation by Bruce Power Inc.

MR. RENCHECK: Good evening, Mr. President, Members of the Commission. For the record, my name is Mike Rencheck. I'm President and CEO of Bruce Power.

As mentioned previously, I would like to begin by acknowledging these proceedings, our site and operations are within the traditional territory of the Saugeen Ojibway Nation, and the traditional harvesting territory of the Métis Nation of Ontario and the historic Saugeen Métis.

Welcome to the place we call home,

Bruce, Grey and Huron Counties. We reflect this in terms of how we do business. Our business planning emphasizes safety first, operational excellence, project excellence, sustainability and innovation, and people and community.

These are our focus for our vision, mission, conduct and our behaviours. Our people are our pride. We have great people, and they do great things.

We provide 30 percent of Ontario's electricity at 30 percent less than the average residential cost, and when compared to other forms of generation, we are a low-cost producer.

According to the Ontario Energy Board, in 2017 the generation costs for other forms of production are solar at 48 cents a kilowatt hour, natural gas at 20 cents per kilowatt hour, wind at 17 cents per kilowatt hour, Bruce Power at 6.6 cents a kilowatt hour, and hydroelectric is 5.8 cents per kilowatt hour, all done while being one of the safest forms of generation.

We view our responsibility to continue providing safe, clean, reliable and affordable electricity to Ontario as a social responsibility.

We also save lives, making isotopes

that sterilize medical equipment and treat brain tumours, and by reducing emissions.

The start of Bruce 1 and 2 enable the phase out of 70 percent of the coal generation in Ontario, reducing smog days from more than 53 to one since 2014.

Overall, nuclear generation supplies about 60 percent of the electricity in Ontario and, as a result, Ontario is among the lowest carbon dioxide emitters from the electric sector, at about 46 grams of CO₂ equivalent per kilowatt hour, and is orders of magnitude less when compared to California at 240 grams of CO₂ equivalent per kilowatt hour and Germany at 544 grams of CO₂ equivalent per kilowatt hour.

We greatly contribute to Ontario being a world leader from an environmental perspective as it relates to climate change mitigation.

We can't rest on our laurels. We have a continuous improvement approach to safety, security, radiological conditions, environmental, operational and project excellence.

Recently, we announced with the County of Bruce the creation of Ontario's Nuclear Innovation Institute, planned to be located here in Southampton, Ontario. Here, we will bring the leaders of

technology and science to advance our efforts.

The Institute will focus on technology such as artificial intelligence and cyber security, environmental science relating to Lake Huron and Georgian Bay areas, including the climate change effects, operational excellence, medical and industrial radioisotopes, indigenous economic development, and a skilled training secretariat.

We foresee these advances in safety, health, technology, operational performance while improving the well-being of our people and our communities.

The Institute will look to the future and provide opportunities to our local communities, schools and businesses to engage and benefit from a broader participation and understanding in these areas. We look forward to breaking ground around 2020.

This is likely the only facility of its kind for people and communities in a rural area that advances technology, science, education, skills and economic development.

We are one of the safest industries in the world, and we are working to continue this posture for decades to come. Let me show you what I'm talking

about.

--- Video presentation

"Picturesque small towns, spectacular sunsets, scenic trails, pristine beaches. This is the place we call home, a place where our 4,200 employees live, work, and play, where they grow their careers, raise their families, and enjoy a healthy lifestyle in the friendly embrace of a caring community. It's also a place where innovation and opportunity thrive. Our evolving world poses complex challenges, and Bruce Power constantly explores new ways to meet those challenges.

The safety and welfare of our people, our environment and our economy, these are our priorities. Our number one value is safety first for our guests, contractors, employees and the public.

We conduct more than 100 drills and emergency exercises every year, including corporate-level drills for fire, security and emergency preparedness staff, engaging site and off-site support organizations.

Ingenuity is key to our success, with new techniques that enhance industry standards.

Just one example is our state-of-the-art Bruce Reactor Inspection Maintenance System tool, designed to improve efficiency, reduce maintenance time and ensure worker safety.

We have taken lessons from the 2011 event at Japan's Fukushima plant to add even more safety layers to our own facilities to prevent accidents, mitigate their impacts, and avert radioactive releases. This includes new high-capacity pumper

trucks, portable generators, and quick connections in our stations to provide yet another source of make-up water and back-up power.

We have successfully tested this equipment in real-time drills and conducted a probabilistic safety analysis to confirm that the risk of a large release from our facility is extremely low.

Going forward, we will install a containment-filtered venting system to prevent releases to the public and practically eliminate the need for evacuations.

We use advanced software to monitor, maintain, replace or refurbish our equipment. Initiated in 2016, our life extension program, Canada's largest infrastructure project, remains on time and on budget, and our robust investment in the

major component replacement project will extend the safe operational life of our units until the year 2064.

We show our respect for the spirit of community by contributing millions of dollars annually to worthy initiatives in our region and across the province. Our community investment and sponsorship program supports youth, health, events and indigenous programs, as well as our military, veterans and first responders.

With a boost from our employees and colleagues, the United Way of Bruce-Grey was recently able to double the funding for their utility assistance program.

We take our stewardship of the ecosystem seriously, researching the current environment and the impact of

human activity and leading by example through sustainability practices and community outreach. With restorative tree planting, fish population studies and control of our ecological footprint, our environmental management system helps to preserve the habitats of our native plants and wildlife. We are a sanctuary with over 138 species, including more than 40 endangered species that thrive at our unspoiled location.

Our work with universities and Indigenous groups ensures that the delicate balance of nature is carefully maintained.

Located on the shores of Lake Huron, we know how vital the watershed is for drinking water, farmland irrigation, family recreation and the production of our low-emissions electricity.

Together with the Council of

the Great Lakes Region we are studying the effects of climate change on our region's aquatic environment.

What could be more important than the air that we breathe? Bruce Power provided 70 per cent of the energy needed to give Ontario the distinction of being the first jurisdiction to eliminate coal-fired power, significantly decreasing smog and lowering incidents of respiratory illness.

In addition, Cobalt 60, an isotope harvested from our reactors, is processed to sterilize medical equipment, keep food safe and fight the Zika virus, and we will soon be a primary source of high-specific activity Cobalt which treats brain tumours through gamma radiation.

Ontario's economy is

strengthened profoundly by the nuclear industry from consumer cost control to job creation, to local purchasing policies. Bruce Power supplies over 30 per cent of Ontario's electricity at 30 per cent less than the average cost to produce residential power, directly and indirectly creates and sustains 22,000 jobs annually and almost exclusively uses local suppliers for equipment and materials.

Our cumulative economic activity should total more than \$180-billion by the year 2064.

Now in development, the Ontario Nuclear Innovation Institute in partnership with the County of Bruce is destined to be an impressive international centre for applied research. Industry leaders will focus on artificial intelligence and cyber security, medical and industrial

isotopes, environmental health, Indigenous economy, operational excellence and skills training for a stable labour force.

Everyone at Bruce Power is proud of our commitment to reliable and safe energy, environmental stewardship, health and wellness, economic vitality and innovative growth.

As your good neighbour, we welcome you to learn more about the integral role we play in our community, the province and the nation."

MR. RENCHECK: In today's agenda, we are presenting an ever-improving focus on safety, operational environmental performance and community outreach and relations.

As an update of the items discussed in Part 1, today we'll present an update on operational performance, probabilistic safety analysis, emergency preparedness, fitness for service, environmental assessments and community and Indigenous relations.

Let me turn the presentation over to

Len Clewett.

MR. CLEWETT: Len Clewett, for the record.

I'd like to update the Commission on two topics since the Part 1 hearing. The first involves safety first and human performance.

Over the past month the Bruce site achieved the equivalent of eight full reactor years without a significant human performance event, and that's based on industry standard metrics.

Even with this performance, we're focused on continuous improvement and a site-wide initiative involving identification of risks and safety hazards. We completed training of all managers and supervisors and are on track to complete training of all individual contributors this year.

The second item is an update on fitness for duty. We continue to work with the industry to identify best practices and secure our qualified third party testing administrator for the lab.

We are on track to comply with the requirements on July, 2019 with the exception of random testing which will be December, 2019.

We continue to provide regular updates

to the CNSC staff.

And now I'll turn it over to Mr. Saunders.

MR. SAUNDERS: Good evening. Frank Saunders, for the record.

--- Off microphone / Sans microphone

MR. SAUNDERS: Sorry, forgetting the mechanics.

I'd like to talk a little bit about safety analysis and emergency planning. As you know, we've been updating our plants in the post-Fukushima era and adding in considerable new layers of defence. Since our official update of safety analysis in 2014 this has been evolving. We've now agreed on the update for the end of 2019 with CNSC staff about the methodology we use and this is the third time we're presenting you the status where we are today in terms of making that. So, we're going to update that for you.

First, a little bit of perspective. This came out of the mining conference in Vancouver just earlier this month and I thought it was interesting in that it wasn't generated by the nuclear industry. So, this is actually, you know, number of deaths per hundred thousand terawatt hours of

generating capacity.

And, as you can see, the conclusion here is that nuclear is one -- is, well in fact, in this case the lowest and one of the safest forms of energy in the world and these numbers do indeed include Chernobyl and Fukushima. Many of these numbers in all the energy fields are related to the construction and mining and et cetera that goes on within the industry. So, it's a sort of total picture.

Probabilistic safety analysis is, as you know, a tool that we use -- one of the many tools actually to analyse the risk of operations in our plant. We used to call it a PRA, probability risk analysis, and in reality we realized it wasn't the risk we were looking for but the safety, so we call it probabilistic safety analysis.

Traditionally this is focused very much on the way the plant functioned, it was very mechanistic, it dealt with pumps and valves and other things that fail. We've got lots and lots of data on that, including our own data and data around the world. Very good at doing the internal plant events.

These -- and I'd say up until about 2014 this was a traditional way PSAs were done. Since

Fukushima we've started in extreme events: hurricanes, et cetera, and do the analysis on that. And, of course, since then we've also added a whole new layer of defence in depth at our plants that we're going to talk about in a second.

So, you will see as I go through this that the traditional part of the PSA that we've analyzed for years, our numbers there are below one in a million, in fact, they're about in the order of 3×10^{-7} , so three times in 10-million years, which is up there with the very best in the world.

So, again, a little bit of comparison for you in terms of, I think people get confused, at least they tell me they don't quite understand what we mean when we say once in a million chance in a year that a thing can happen. So, just a little bit of comparison with some of the things that you do know in life.

So, crashing your car every year, that's 7×10^{-3} . So, well over a thousand times more frequent than any kind of a nuclear event.

A train derailling, 5×10^{-3} .

Breaking a bone, any kind of bone, that's 1×10^{-3} . It could be a major one or a little one, but it's sort of the frequency in Canada.

A train collision, sort of 8×10^{-4} . A train derailment with dangerous cargo or release, 5×10^{-4} . So, you can see you're 500 times more than that 10^{-6} kind of number would look like.

And nuclear is down here at the bottom at 10^{-5} for our goal, or once every hundred thousand years and our administrative limit is once every million years.

And I'll focus in on this a little bit for you. I did provide a handout. I apologize, when we put the slide together you see we created some animation to focus in on that little bit at the bottom and when you print the package, unfortunately, the animation doesn't print. So, I provided this next slide so that you would have a copy of it.

And you can see those ones on the left are the at power events and you see both individual unit events and the aggregated events across four units for Bruce A on the left and Bruce B on the right. And you can, indeed, see below that heavy line is that once in a million. So, Bruce B, even with all four units aggregated together is around 3×10^{-7} . Bruce B is just under the one in a million at about 9×10^{-7} . So, pretty good impact.

Seismic and high winds are also very

small. The area that is still reasonably large is fire, still below our limit, and this is mostly due to the modelling. Our modelling in fire events are still fairly rudimentary, although we're working hard at it, and by rudimentary I mean overly conservative.

The rule in PSA is if you can't predict it accurately, you make sure you predict it conservatively and that's what we do in fire. We are working to improve that and, indeed, have improved it over a few years and we have a number of projects in the plan to help bring it down. But in fire there's no one major thing we can do that would dramatically change it, other than fix the model that's a bunch of small things.

So, I thought we should -- you know, the main thing that's driving the changes in PSA and reducing it is the work we've done on Fukushima. And the Fukushima work was really done in three stages. One was aimed at preventing accidents; the second was aimed at mitigating ones that did occur, in other words, truncating the event before it became overly serious; and the third one was, should you get to a serious accident you make sure that the material is not released to the public.

So, on the accident prevention side,

that work was all done actually in 2012 and 2013, so all these units have been converted and essentially results in -- it basically means that we have pumper trucks which we can connect through quick connects to the units adding water to the steam generators which keeps the fuel cool, adding water to the fuel base in case that was an issue with fuel, and providing power to essential plant systems through portable generators that wouldn't be affected by some kind of an event on site directly.

We have tested this out and we have deployed this and set it up in 30 minutes. We are doing modelling in terms of actually how we would do it in different events and proving that we can in fact deploy it in severe weather events as well or severe natural events so that the EME is always available.

Mitigation projects are nearing completion. Right now we have one mechanism to add water already in place for all things. So in mitigation we are talking about the fuel that's got some damage, so we're either adding water to the moderator or to the shield tank or other places where we can truncate the damage and stop it from expanding. So we have what we call Severe Accident Management tool kits which allow us to take a valve apart, for

example, and put a fitting on that we can hook a hose up to, or things like that, to make sure that we can cool.

We are in the process of adding the same type of quick connects that we have for our steam generator make-up to these systems as well. They provide two things. One is it's a redundant way because they will be in a different place, in a different location, so it doesn't get impacted. And secondly it's much faster to hook up to these.

Five units are already done. There's two more scheduled for 2018 and the last one next year.

There's one small piece in Unit 6 which will be done in the MCR but Unit 6 won't operate after 2019 anyway. We will be into the MCR work.

And then the last bit is the Containment Filtered Ventilation System. When you worked out our PSA numbers, in fact it indicated that the numbers were small enough that we didn't actually require a containment ventilation system. The probability of a large release to the public was very small at any rate.

But this kind of system we did work for some time to perfect this design with a third

party designer that would operate at the low pressures that CANDU containment systems require. We have finished that design now and we are planning to implement by 2022. This system will actually prevent the failure of containment. So anything venting from containment will go through a filter system and we do expect that this will actually prevent any kind of release that would have caused an evacuation.

We did a study on a four unit severe accident where we did very little EME deployment. Had this severe accident occurred, fuel damage on all four units, and although we had sheltering within the 10-kilometre zone, no evacuation was predicted by the analysis.

We will perfect the CFVS as we get ready to install it. The update we will provide in 2019 will include a sensitivity analysis on CFVS until it's actually installed in the plant, and then we will turn it into the final analysis.

A new Provincial Nuclear Emergency Plan was issued at the end of last year and a number of issues here for us to deal with. Most of them are fairly straightforward for us and we are busy modifying our plan to adapt the new terminology, and so forth, and we are working with communities as well.

This is a little bit of a depiction. You can see that the zonal map doesn't change all that much, but the zones are renamed. So that's one thing we have to do.

A number of the limits are changed. They are not changed outside of the range of the previous limits but they have a defined term now which we need to build into plume modelling and other things.

Essentially if you look at our map here, when we look at the filtered venting it was our desire when we installed that venting to make a situation where we don't really ever need to worry about evacuating people.

And it is our expectation as we finalize that analysis and provide the details to the province and others that we can significantly reduce the planning zones that we need to have around Bruce Power.

We are working with our communities, both Kincardine and Saugeen Shores, to implement the new PNERP as well. Both these communities have draft plans in place and we are looking at alternate location for some of the facilities that would be for sure well outside of any contamination zone.

We are also participating in the Rural Interoperability Program which was funded by the federal government about a year and a half ago. And that Regional Interoperability Plan will be complete by the end of 2018 so that the units in these three counties can in fact operate very well together.

This is just a quick picture of some of the community work we do.

Also on the right our Minister of Community Safety and Correctional Services at the time was looking at our new fire training facility and a program we had in place to invest in community safety.

Top left is an ambulance we were dedicating to the Bruce Huron Branch of St. John Ambulance.

And the bottom left is an air light vehicle that we were donating to the Grey County Fire Department, which is one of the support vehicles you use in fighting fires.

So some of the ongoing improvements.

Updating the plume modelling software to align with the new Generic Intervention Levels. It doesn't actually change how the software works, but because the definitions are changed the answers to software needs to be adapted to suit that.

We are providing two mobile decontamination facilities by the end of next year. These will make it very easy for us to move. We do practise moving the current facilities in exercises, but setting them up as mobile facilities in the first place will make it a lot easier to move them should the event require you to do that. We are going to test all this next year during Huron Resilience.

We have done a lot of work on our Emergency Communications Program, which I'm going to give you a quick preview of how that data flows. We have had a number of discussions on this in the past and I think it is worth sharing.

--- Video presentation / Présentation video

"... worth sharing plant system data and emergency response information quickly and effectively to both on-site emergency response command centres and off-site agencies. The use of primary communications infrastructure, as well as back-up satellite and power, ensures 24/7 operation even during large-scale infrastructure

outages. Sharing information via fax is maintained as a back-up to this system.

As you can see, logging into DLAN is similar to any other secure software application.

The first view is the dashboard, which graphically depicts both Bruce A and Bruce B stations. A list of notification and data forms associated with the event is located on the top right of the dashboard. In the lower right corner is the event timeline that depicts event times and description to enhance understanding of the event sequence and activity.

Any changes or data input to the system will be identified by flashing orange. This lets the user know that a particular unit is affected and has information entered showing unit status.

Click on Plan Information to

see an overview of the station parameter data entered for all units at that particular facility.

If you go back and click on a particular unit, you are able to see a unit schematic highlighting the various critical systems.

Clicking on a specific system shown in the legend allows the user to see the system data parameters for that system. The ability to further drill down opens up the data table to present the full suite of data associated with all of the systems of that particular unit.

From here data can be extracted to CSV or Excel file formats for further use by the user. The data is all searchable, whether it is current or by date and time.

The graphs provide ease in drilling down to provide further

detail of system behaviour with capability to show 15-minute increments.

Data or information updates to the DLAN application are depicted in orange. This identifies to the user that information has changed since the last report and makes it easier to track system data updates.

Looking again at the dashboard, you see the Event Timeline in the bottom right corner. This data is entered to show a timeline of events as they occur. This area automatically scrolls for ease of viewing if there are multiple events on the timeline. The auto scroll feature can be paused and the timeline can be moved forward and back manually to allow quick access to the data.

The DLAN application provides opportunity for the user to

develop custom data screens to quickly access information relevant to the role. In this case we have developed several custom graph and data screens with icons listed across the bottom of the screens for easy access.

Clicking on vacuum building graphs displays a screen that shows station parameter and source term data tables and corresponding graphs showing data trends for vacuum building pressure, as well as containment pressures for all selected units.

This data is easily extractable and graphs can be manipulated easily to show more detailed information.

Click on the heat transport graph icon to open a screen that depicts heat transport system levels for each header. Similarly the EARP operator board

icon opens graphs that have specific interest to EARP operators.

As an example, the graphs shown here display the vacuum building pressure and containment pressure.

DLAN provides all users a single integrated process that presents a clear concise method of transferring critical data quickly and in such a way that all data is automatically trended.

This allows timely decision-making based on available facts that are received and automatically trended more quickly than faxing. The development and use of DLAN is our response to lessons learned during the 2011 Fukushima Daiichi event in Japan. DLAN provides a solution that allows all users a single version of the truth."

MR. SAUNDERS: And with that, I will turn it over to Gary Newman, our Chief Engineer.

MR. NEWMAN: Good evening. For the record, Gary Newman.

Given some of the discussion and questions from the Day 1 session, I thought it might be helpful to provide some additional technical details associated with both hydrogen concentration predications and fracture toughness model enhancements that are currently under development.

As the Commission Members may be aware, the operating temperature of the fuel channel range between approximately 250C at the inlet to about 300C at the outlet. Since the hydrogen pick-up process is temperature dependent, we tend to see the highest values on the outlet end of the pressure tube near the roll joint.

At the time of each of the unit MCRs, the above tables provide a summary of the bounding predicted hydrogen equivalent values, based both on the probabilistic on the left-hand table and deterministic shown on the right-hand table.

The main difference between the two predictions is simply that a portion of the probabilistic inputs are treated as distributed

parameters and hence provide a more modern treatment of the bounding values for each of the units. As such, the probabilistic predictions indicate that we just reached the current model validity limits in the case of Units 5 and 7, whereas the deterministic predictions exceed the 120 ppm in the case of the Bruce B units at the time of their MCR.

As indicated in the note at the bottom of the slide, the industry plans to further extend the validity limits of the existing fracture toughness model to 140 ppm by the end of this year and then 160 ppm by the end of 2019.

This next slide simply provides a time when each of the units reach the 120 ppm milestone, recognizing that it is the industry's plan, as already noted, to increase the validity limits to 140 ppm by the end of 2018 and 160 ppm by the end of 2019.

In this schematic I have shown a fuel channel with the inlet and outlet end fittings and intervening pressure tube. I should note that over the full length the pressure tube is 6500 mm, approximately 50 mm or less than 1 percent of the working length of the pressure tube near the outlet end. In the limited regions shown in green here there is a potential to exceed this 120 ppm if you utilize

the deterministic results, whereas the balance of the pressure tube would remain below this limit even when using the less advanced and more conservative deterministic predictions.

And just so you have a sense of the scale, the automobile is approximately the length of the pressure tube, a little shorter, whereas the edge of the credit card is about the same dimension as the 50 mm I noted earlier.

This slide captures the timing that I have already described in the prior presentation.

In this plot of temperature versus fracture toughness, one can see the two-region model: at lower temperatures the transition region, which is representative of reactor heat-up and cool-down operation, and the higher temperature region representing normal operation. The burst test program is continuing to extend the validity of our transition region model, which is sensitive to hydrogen equivalent concentration, as we have already discussed.

And finally, this table provides a summary of the planned testing for the balance of 2018 and 2019, and like any normal test program the results from this work will inform the next steps in 2020 and

beyond.

Again, as a reminder, I have high confidence that the work completed so far in this program will further extend the validity range of the existing fracture toughness model in a stepwise manner to achieve both 140 and 160 ppm milestones in 2018 and 2019, respectively.

At this point I would like to turn the presentation over to Mr. James Scongack.

MR. SCONGACK: Thank you, Gary.

For the record, James Scongack. I am the Vice President of Corporate Affairs and Environment at Bruce Power.

I'm looking forward to sharing with you this evening our efforts on environmental protection and community and indigenous engagement. But before I do that, on slide 31 I would just like to correct the bullet two. There is a typographical error. It says:

"Bruce Power conducted an EA
under the Nuclear Safety and
Control Act..."

That should read "CNSC". So just for clarity and consistency with all of the CMD materials that you have seen in your packages.

I would like to start by talking about our commitment to the environment.

Mr. Rencheck and Mr. Clewett earlier talked about the four pillars of safety we have at the Bruce site and environment being one of those four critical pillars.

When we look at environment we look at it on the basis of beyond regulatory compliance. We are committed to continuous improvement, environmental stewardship and everything we do, whether it is on our site or off our site we bring that rigour and that commitment to bear.

When we think of our operation we not only are proud of the various environmental attributes that our technology provides Ontario, as talked about later, we also recognize that the fact our facility operates, although it is deemed to be low to negligible in terms of an environmental impact, we do everything we can to minimize our environmental footprint. It is the same principle that we apply to radiation protection in our operations with a principle of as low as reasonably achievable.

That also goes to the generation of waste. We do know that through the generation of electricity from nuclear power we do generate a waste

by-product, it's a small volume of waste, but as an operator we are committed to not only funding the long-term liability requirement associated with that waste, and most importantly ensuring that it is safely managed, but do everything we can in our ongoing operations and our ongoing capital investment program to minimize that volume of waste. That is a commitment that you see across the organization and it's something that is consistent with our number one value of safety first.

One of the things -- and it is alluded to in a number of the interventions that we are going to talk about over the course of the coming days -- is the environmental assessment that the CNSC carried out under the *Nuclear Safety and Control Act* related to this licence application. From our perspective I think there are a number of elements and a number of Bruce Power inputs into this process that are important to talk about this evening.

The first is our environmental risk assessment process, which is a very robust process we undertook to really characterize our baseline environmental conditions, the impact of ongoing operations and also predict our future interaction with the environment going forward. And it is really

important to note that this ERA is not a body of work we completed that stands in isolation, it is a body of work that we commenced in 2001 when we assumed control of the Bruce Power site when we undertook the first environmental assessment to return to service and life extend and refurbish Units 1 and 2, and it is a process that through that project and that goal of the company at the time to extend the operational life of our facility, that had a tremendous amount of rigour enclosed in it. It was a process at the time that made a series of assumptions, made a series of predictions as it related to both refurbishment and operational activities, and as we went through those projects and we went through those activities we verified and confirmed the environmental effect that we had through those projects.

So when we talk today about an ERA and we talk today about predictive assessment, while it is called a predictive assessment from a Bruce Power perspective, we look at it as an assessment that takes actuals, that is able to take evidence that we are able to demonstrate in our previous environmental assessment follow-up programs. All of the activities that are proposed in the 10-year licensing process before the Commission, whether it's ongoing

operations, whether it's major component replacement, they are all activities that have been carried out before and they are all activities that have been verified in terms of their environmental interaction. As a consequence of that, the environmental factors of the site are well understood. I think as we go through the coming days that is a very important point that is really central to the position and the confidence that we have in the information that we provided through this process.

I would now like to move on to the next slide and talk about anticipating the environment in the future.

There is a lot of dialogue in the world today in our industry at large and you see it in a lot of our materials related to the effects of climate change. We see that climate change is real, it's a risk and it is an issue that we are tackling across the globe, and we are very proud of the work that we are doing to continue to evaluate the effects of climate change in the Great Lakes region by partnering with the Council of the Great Lakes Region, but we are also confident as an operator that to the extent the environment around us changes, as we look at whether it's the CNSC ERA process, whether it's the

range of environmental permits that we have at the federal and provincial level, that as baseline conditions change we continue to monitor those baseline conditions and our regulatory regime adapts to that.

The other thing I would say related to the element of climate change -- and it's something that we are very passionate about at Bruce Power, you heard about it in Mr. Rencheck's opening remarks and in his presentation -- we haven't accepted the fact that the battle against climate change is over and so while there's a number of interventions we are going to hear in the next couple of days that suggest climate change is going to dramatically change our environment, we haven't given up on the fight on climate change, that's why we are a low emissions producer, it's why we work to return our units to phase out the use of coal and why we want to keep our units online through this life extension to prevent Ontario from going back to coal-fired generation. That is something you are going to see a lot of passion I would imagine broadly in the community and amongst the Bruce Power staff.

The final element I would also like to flag from an environmental perspective is related to

our work in research and development.

Since 2010 we have invested approximately \$9 million in a series of real cutting-edge research and development work, whether it's looking at chemical and radiological stressors on lake and around whitefish, whether it looks at the population distribution within Lake Huron and of course biological effects of low dose radiation. So, you know, we are an organization that sets the bar high and is always looking to be leaders in the areas of environmental excellence.

I would now like to talk about how we have engaged the indigenous and non-indigenous communities in our licence renewal process.

As many of you are aware, our last licence renewal hearing was in the spring of 2015 and coming out of that hearing process we recognized there were some areas that we could enhance when it came to in particular our engagement with indigenous communities. And coming out of the last hearings we sought to incorporate those changes by providing longer-term look-aheads as to the various regulatory activities, including CNSC activities, and also started a dialogue with the broader community earlier.

As you probably know from a number of

interventions, what happens on our site is of tremendous interest to people in this region in particular and more broadly across Ontario and Canada. So we started a dialogue in August 2016 that continued right up until these hearings to really talk about the road ahead and Bruce Power's long-term plans. We use new tools to engage people through social media, through stakeholder workshops, community information mailings and a whole series of other items that you will see reflected in not only the Part 1 but the Part 2 meeting materials.

I think the key message we really want to leave people with is we are a company that values openness and transparency, we are a company that values engaging people often and early, and we are a company that is not afraid to answer any questions people may have. We are an open door organization and we very much value that role.

I would also note that outside of the licence renewal process itself you will see from municipalities, from hospital corporations, we have existing arrangements and memorandums of understanding in place so we can work together on a range of items, and these can be items of mutual interest, they can be items that have been brought to our attention, whether

it's emergency preparedness, whether it's how we make enhancements to local healthcare, how we can communicate better and of course environmental items.

Moving on to the next slide, as noted by Mr. Rencheck at the outset of this Commission hearing commencing this evening, we do respect that our facility, these hearings and the vast majority of the work we do is on the traditional territories of indigenous peoples. We have protocol agreements in place with the Saugeen Ojibway Nation, the Historic Saugeen Métis and the Métis Nation of Ontario. The purpose of these protocol agreements is really to ensure and facilitate an active dialogue on a range of items of mutual interest between Bruce Power and these indigenous communities, and fundamentally it is a recognition of the fact that the principle we are starting with is that indigenous peoples and indigenous communities have unique interests that relate to our operations and that it's very critical for us as an organization to do everything we can to engage with these communities, to ensure there is adequate capacity in place for these communities to engage in the regulatory process and, as you can see from our submission in the CMD, we are very confident and believe in both the indigenous and non-indigenous

community that through this process we have engaged very thoroughly and been incredibly transparent throughout the process.

Finally, moving on to the last slide, as I mentioned earlier, you know, we are very honoured to have a tremendous level of community support across Grey, Bruce and Huron counties. Grey, Bruce and Huron counties -- which also encapsulates the traditional territories that I mentioned earlier, in fact the traditional territories span beyond that region -- is really the area that we focus on and we are very honoured, you see the results of public opinion polling that was carried out. This is an area that is as far east as Collingwood, as far south as Exeter. It's a massive geographic area. It doesn't just cover areas where our employees live, it's a very large region. And as you can see from our recent public opinion polling where we retained an independent public opinion expert to carry out a review, there is tremendous support in the safety, in terms of our engagement in the community and in looking at the refurbishment.

You know, I say this out of -- not out of arrogance, we do not take our community support for granted, we work as hard as we can every day, whether

it's in the operation of our facility, to drive safety and operational excellence, but we also beyond that translate that value and that focus to our engagement with the community. So while these numbers are high, it's something we never take for granted, we work at it every single day, and until every single one of those numbers is 100 percent we are not satisfied and that's the principle by which Bruce Power works and I don't think the community would expect any less of us.

So with that, I would like to pass it over to Mr. Frank Saunders.

MR. SAUNDERS: Yes. Just in conclusion, I think we believe that we have through our past performance demonstrated our ability to operate the plant safely and would request that the Commission approve our licence application and the 10-year licence that goes with it. I won't read all the words, I'm sure you have seen them many times.

Thank you for your time.

THE PRESIDENT: Thank you.

I would like to move now to the presentation from CNSC staff as outlined in CMD 18-H4.B and 18-H4.C.

Mr. Frappier, I understand you are going to make the presentation. Over to you.

CMD 18-H4.B/18-H4.C

Oral presentation by CNSC staff

MR. FRAPPIER: Thank you and good evening, Mr. President and Members of the Commission.

For the record, my name is Gerry Frappier and I am the Director General of the Directorate of Power Reactor Regulation at the CNSC.

With me today are Mr. Luc Sigouin, Director of the Bruce Regulatory Program Division, and Mr. Ken Lun, Senior Regulatory Program Officer of the same Division. Regulatory and technical staff from the CNSC are also present and available to answer any questions the Commission may have.

I will now pass the presentation to Mr. Luc Sigouin.

MR. SIGOUIN: Thank you, Mr. Frappier.

For the record, my name is Luc Sigouin. I am the Director Of the Bruce Regulatory Program at the CNSC.

This presentation provides information in relation to the renewal of the Bruce A and B power reactor operating licence. Our presentation today will provide a summary of the Part 1 information

relating to staff's assessment of Bruce Power's performance as well as updates and responses to Commission requests from the Part 1 hearing.

I will now provide some background for the presentation.

Part 1 of the Bruce licence renewal hearing occurred in Ottawa on March 14th, 2018. During that time, CNSC staff presented a summary as well as highlights from CNSC staff's written submission found in CMD 18-H4. The CMD provided CNSC staff's conclusions and recommendations on licence renewal. Today's presentation provides updated information since the Part 1 hearing and highlights the detailed information found in CNSC staff's supplemental CMD 18-H4.B

Of note, all information pertaining to the March 14 Part 1 hearing is available on the CNSC website. This includes all CMDs as well as the transcript and video recordings of the proceedings.

I will now go over the purpose of this hearing.

The Commission granted Bruce Power its first licence to operate the Bruce A and B stations in 2001. The most recent relicensing hearing was conducted in 2015. This hearing represents the sixth

licence renewal request to the Commission.

In June 2017 Bruce Power submitted a request to the Commission to renew its power reactor operating licence for a period of 10 years, which encompasses operation as well as activities related to refurbishment. In support of the licence application and activities associated with refurbishment, Bruce Power completed a periodic safety review, or a PSR, in accordance with CNSC Regulatory Document-2.3.3 on Periodic Safety Reviews.

In its application Bruce Power is requesting that the Commission approve the operation of Bruce A and B up to a maximum of 300,000 equivalent full power hours, or EFPH. The current licence allows for operation up to 247,000 equivalent full power hours. Bruce Power is also requesting the Commission to accept the scope of the refurbishment project as identified in the Integrated Implementation Plan. And lastly, Bruce Power is requesting the consolidation of the Class II nuclear facilities and nuclear substance and radiation devices licences into the power reactor operating licence. These include the irradiator facility licence used for instrument calibration, the consolidated use of nuclear substance licences for laboratories and radiation devices, and the industrial

radiography licence for non-destructive testing.

A periodic safety review is a comprehensive evaluation of the design, condition and operation of a nuclear power plant. International practice for PSR intervals is that they be performed every 10 years. A PSR involves an assessment of the current state of the plant as well as plant performance to determine the extent to which the nuclear power plant conforms to modern standards and best practices and to identify any factors that would limit safe long-term operation. This enables the determination of reasonable and practical modifications that should be made to allow for safe long-term operation and to enhance the safety of the facility to a level approaching that of a new NPP.

In undertaking the PSR, Bruce Power has systematically reviewed the current state of the plant against modern standards and practices and has identified the improvements that will be made to Bruce A and B over the next 10 years. CNSC staff reviewed the submitted information and determined that Bruce Power's PSR met the requirements of REGDOC-2.3.3 on Periodic Safety Review and that all commitments are documented in an Integrated Improvement Plan. CNSC staff will report annually on the status of all PSR

commitments to the Commission through the Annual Regulatory Oversight Report on Canadian Nuclear Power Generating Sites, which was formerly called the Regulatory Oversight Report on Canadian Nuclear Power Plants.

This slide provides Bruce Power's timeframe for refurbishment of the Bruce units. Refurbishment would start with Bruce B Unit 6 in 2020 and would continue until 2033 with Unit 8. The requested licence period would expire in 2028. Pending the licensing decision by the Commission, Bruce Power would need to submit a new licence application, including a new periodic safety review, prior to the start of refurbishment of Units 7 and 8.

CNSC staff did not identify factors which would limit safe operation over the next licensing period. Bruce Power has programs and processes in place to safely manage refurbishment work and CNSC staff will maintain oversight of the programs by conducting detailed refurbishment reviews and inspections. These reviews and inspections will focus on topics such as project execution, contractor and project management, and training programs.

Regulatory hold points will ensure operational readiness of structures, systems and

components for the return to full power operation. The hold points would serve as regulatory verification to ensure that all prerequisites have been met to allow for staged increases in reactor power. Given that the refurbishment work will span several years, CNSC staff will provide updates to the Commission on the status of the project through the annual Regulatory Oversight Report on nuclear generating sites as well as through the regular status updates on power reactors.

Following refurbishment of a unit licensees are required to perform commissioning tests to demonstrate that the reactor facility can operate in the modes for which it has been designed.

Bruce Power is required to demonstrate that the associated works meets specified requirements and to ensure that documentation has been updated appropriately.

Similar to other refurbishment projects, CNSC Staff identified four regulatory hold points for the return to service of each unit undergoing refurbishment work. These hold points include prior to fuel load, prior to removal of guaranteed shutdown state, prior to exceeding 1 per cent full power, and prior to exceeding 35 per cent

full power.

CNSC Staff are recommending that the approval to remove regulatory hold points be delegated to the Executive Vice-President and Chief Regulatory Operations Officer of the CNSC.

For reference, a similar delegation of authority was previously granted for the refurbishment of Darlington, the refurbishment of Point Lepreau, and also for the refurbishment of Bruce Power Units 1 and 2.

I will now provide an overview of CNSC Staff's performance assessment of Bruce Power in the 14 safety and control areas, starting with an overview on CNSC Staff compliance verification activities.

Bruce Power is responsible for ensuring safe operation of the stations and CNSC Staff independently verify Bruce Power's performance. CNSC site inspectors carryout daily walk-downs as well as inspections with specialist staff from Ottawa following the CNSC risk-informed baseline compliance program.

The regulatory efforts can be adjusted, depending on the performance of the licensee as well as the need to oversee special projects such as refurbishment. This table shows the compliance

verification activities by CNSC Staff during the current licensing period. This includes reviews of REGDOC-3.1.1 event reports, plant walk-downs and detailed inspections.

These activities represent an average of 1,600 person days of effort per year at the Bruce site and over 5,000 total person days of effort per year spent on all Bruce regulatory compliance activities.

The reported numbers in 2015 were lower at site compared to other years, as CNSC site staff efforts were shifted towards activities requiring to support the 2015 licence renewal.

CNSC Staff have not identified any significant findings as a result of the compliance activities that were performed at Bruce A and B.

This slide provides the summary of Bruce A and B plant ratings over the current licence period for each of the 14 safety and control areas. CNSC Staff continues to report on the performance of Bruce A and B separately even after the licences were combined into a single licence in 2015.

Although many of the programs, processes and procedures are shared between Bruce A and B, each station has its own separate work crews

and the stations differ in design, as Bruce B was built seven years after Bruce A.

Bruce Power's performance in 2017 was rated either satisfactory or fully satisfactory in all 14 safety and control areas. Their ratings are unchanged from 2016.

This slide provides a summary of Bruce Power's performance over the current licensing period.

Bruce Power meets regulatory requirements in all SCAs and received a satisfactory rating or higher in each of the SCAs. No worker or members of the public received radiation doses in excess of the regulatory dose limits.

All radiological releases were well below regulatory limits and all releases of nuclear and hazardous substances were assessed, controlled, and monitored. Licensee programs are implemented and maintained effectively and in accordance with regulatory requirements. Safety enhancements and improvements continue to be made during the current licence period.

I will now pass the presentation to Mr. Lun, who will provided focused highlights on the regulatory focus areas.

MR. LUN: Thank you, Mr. Sigouin.

Mr. President, Members of the Commission, my name is Ken Lun, I'm the Senior Regulatory Program Officer of the Bruce Regulatory Program Division.

As previously mentioned, the regulatory focus area include the 14 safety and control areas and other matters of regulatory interest. In assessing the licence application, all of the safety and control areas were assessed in detail. CMD18-H4 presented CNSC Staff's assessment for each of the areas.

The rest of today's presentation will focus on updates in the areas of: managing alcohol and drug use; large release frequency results; environmental protection, the 2017 Provincial Nuclear Emergency Response Plan; waste management; *Fisheries Act* authorization; and, fracture toughness for pressure tubes.

In the earlier presentation Bruce Power provided its implementation strategy for REGDOC-2.2.4 Volume 2 on managing alcohol and drug use. CNSC Staff are currently reviewing the implementation plan and will continue to assess Bruce Power's Implementation.

Bruce Power will provide an update on

the implementation plan in fall 2018. The implementation dates may be impacted by legal challenges in respect to random alcohol and drug testing.

During the Part 1 hearing the Commission requested CNSC Staff to provide graphs showing large release frequency or LRF results for the 2014 Probabilistic Safety Assessment, or PSA, and the estimated data with planned improvements. These are provided on this slide and also in Bruce Power's earlier presentation.

As stated in CNSC Staff's written CMD, the PSA results submitted in 2014 meet all regulatory requirements. PSA results are updated on a five-year frequency. The next PSA updated will be submitted in 2019.

In April 2018 Bruce Power implemented a policy to assess PSA results that fall between the safety goal limit and the safety goal target to determine if further enhancements could be made. CNSC Staff reviewed Bruce Power's policy and concluded that it meets CNSC's expectations.

CNSC Staff determined that Bruce Power has an effective environmental protection program. To ensure the protection of the environment and health of

persons the CNSC conducts an environmental assessment under the *Nuclear Safety and Control Act.*, or NSCA, for all projects within its mandate.

CNSC Staff completed an environmental assessment, or EA, report which was included in CMD18-H4. The core scientific basis used in the NSCA EA is equivalent to those of the *Canadian Environmental Assessment Act*. 2012 EAs. The EA under the NSCA concluded that risk to the environment is low to negligible and that Bruce Power has and will continue to make adequate provision for the protection of the environment and health of persons.

The Saugeen Ojibway Nation expressed concerns related to potential environmental impacts of Bruce A and B, most notably related to impacts on fish. CNSC determined there is sufficient evidence and information on hand to conclude that the environment is adequately protected now and that it will be protected into the future.

CNSC Staff agreed there are some areas of uncertainty, but CNSC Staff conclude there is sufficient margin to present unreasonable risk to the environment. CNSC Staff agreed that additional monitoring and/or assessments can be implemented to increase accuracy. These areas include: impacts of

fish from impingement entrainment; effluent and environmental monitoring programs; and, thermal risk assessment. Details of these discussions are provided in Staff's supplemental written CMD.

The CNSC independent environmental monitoring program was implemented to verify the public health and environment not adversely affected by releases around CNSC regulated facilities. This verification is achieved through independent sampling and analysis by CNSC Staff.

The previous sampling campaign at Bruce Power was carried out in 2016 with the next campaign scheduled for 2019. Detailed results of CNSC analysis are consistent with the results submitted by Bruce Power, and are available on the CNSC's public website.

The emergency management and fire protection SCA covers emergency plans and emergency preparedness programs. Bruce Power has the capability to respond effectively to any emergency. Bruce Power's emergency response plan covers both nuclear emergencies and conventional emergencies such as fire.

In April 2018 the Office of the Fire Marshal and Emergency Management provided an update to the Commission on emergency management in Ontario and

the 2017 Provincial Nuclear Emergency Response Plan, or PNERP.

Bruce Power is currently meeting all the requirements from the 2017 PNERP. No significant changes are expected to Bruce Power's emergency plan. Impact of municipal plans is expected to be incremental. The existing plans remain in effect and are adequate to protect the local residents.

The waste management SCA covers internal waste-related programs as well as planning for decommissioning. CNSC Staff determined that Bruce Power has submitted sufficient information in its application to address the requirements of the General Nuclear Safety and Control Regulations. The required information is contained by reference in documents such as the Preliminary Decommissioning Plan, annual compliance reports, and waste management program documents.

On and off site transfer of all radioactive wastes from the Bruce site are managed per regulatory requirements.

CNSC's regulatory approach does not license individual shipments, nor the import and export of waste. Most of the waste processing and handling at Bruce site are performed by Ontario Power

Generation, or OPG, who is licensed by the CNSC.

Finally, the waste resulting from the refurbishment activities has been considered in environmental assessments. There are plans in place for the management of this waste.

Specifically, Bruce Power ensures that reduce, reuse and recycle principle is met by transferring waste off site for processing to further reduce the waste volume. The Western Waste Management Facility has sufficient capacity for interim storage of low and intermediate level waste arising from refurbishment and from ongoing operation, including used nuclear fuel.

The design of the proposed OPG Deep Geological Repository includes the consideration of waste volumes from the refurbishment of the Bruce units.

In 2015, Department of Fisheries and Oceans, or DFO, determined there is a need for an authorization under the *Fisheries Act* due to the impingement and entrainment of fish.

The process for obtaining a *Fisheries Act* authorization is separate from that of CNSC license renewal, as they are covered by different legislation.

Under the Memorandum of Understanding between the CNSC and DFO, the CNSC will be responsible for the assessment and monitoring of environmental impact on fish, while DFO will be responsible for issuing *Fisheries Act* authorization and the required offset measures.

In May 2018, Bruce Power submitted their proposed application to CNSC Staff for review prior to the official submission to DFO. CNSC Staff review of the application is currently in progress.

Once the review is completed by CNSC Staff, the next steps will involve engagement and -- with engagement with indigenous groups on the specifics of the application and then formal submission of the application to DFO by Bruce Power.

CNSC Staff expect that the application will be ready to be submitted to DFO in the latter part of 2018.

I will now pass the presentation back to Mr. Sigouin, who will go over the topics of fracture toughness for pressure tubes and Aboriginal consultation and engagement.

MR. SIGOUIN: Thank you.

Luc Sigouin again, for the record.

As discussed during the Part 1

hearing, fracture toughness is a key parameter for pressure tubes. Currently, Bruce Power and the Canadian nuclear industry have developed two fracture toughness models for hydrogen equivalent concentration levels, or HEQ, up to 120 parts per million, or ppm.

These models are used in Bruce Power's assessments to demonstrate the safe operation of pressure tubes in the unlikely event that a crack initiates and propagates through the wall of a pressure tube.

Bruce Power has indicated that HEQ is deterministically estimated to reach about 150 ppm prior to refurbishment, which is beyond the limits of the current model. Bruce Power has a plan in place to continue the development of the fracture toughness models for HEQ up to 160 ppm.

Bruce Power is performing ongoing monitoring of hydrogen content of pressure tubes as well as research and development work such as pressure tube burst tests. Bruce Power must demonstrate to the CNSC that there is sufficient safety margin for the fracture toughness model for HEQ up to 160 ppm.

This table was presented during the Part 1 hearing. It indicates the year, the Equivalent Full Power Hours, and the estimated HEQ content for

each unit in relation to its planned refurbishment date.

For the Part 2 hearing, two columns have been added to the right side of the table. These columns show the current HEQ level at the inlet and outlet ends of the pressure tubes.

It is CNSC Staff's view that the existing regulatory process, which was used to assess and accept the 120 ppm model, is adequate for the continued oversight of fitness for service evaluations of pressure tubes, including the determination of the acceptability of the model for HEQ up to 160 ppm.

In effect, CNSC Staff are proposing two requirements on Bruce Power. First, that Bruce A and B shall not operate beyond 300,000 EFPH, and second, that Bruce A and B shall not operate beyond HEQ levels of 120 ppm until Bruce Power has demonstrated that pressure tube fracture toughness is sufficient for safe operation.

In January 2018, CNSC Staff presented CMD 18-M4 on fuel channel evaluations for Canadian nuclear power plants. The presentation described the key requirements for assessing the fitness for service as well as the rigorous regulatory process that CNSC Staff applies to ensure that fitness for service

requirements have been met.

The requirements and the regulatory oversight process for fitness for service of fuel channels is applied consistently across all licensees.

In addition to the information provided in CMD 18-M4 on fuel channels, I'd like to touch on the issue of HEQ levels at the inlet and outlet of pressure tubes.

The HEQ limits of 70 ppm for the inlet and 100 ppm for the outlet end of pressure tubes as defined in CSA standards are not hard limits. The CSA standards allow for operation beyond those levels, provided that additional fitness for service evaluations have been performed.

Bruce Power and the Canadian nuclear industry continue to evaluate the impact of HEQ on pressure tube integrity, including at inlet and outlet regions, and CNSC Staff will continue to perform reviews of these findings to ensure that pressure tubes remain fit for service.

As requested by the Commission during the Part 1 hearing, CNSC Staff have strengthened the Licence Condition 15.3. The details are provided in Staff CMD 18-H4.B.

Clear and comprehensive compliance

verification criteria have been developed to monitor the progress of the work, including a requirement for Bruce Power to provide formal, semi-annual updates to CNSC Staff on the work progress. In addition, CNSC Staff will report to the Commission on the status of this work through the annual regulatory oversight report for Canadian nuclear power generating sites.

Irrespective of the EFPH value, Bruce Power must continue to demonstrate to the CNSC that fuel channels are fit for service for the continued safe operation of the units.

CNSC Staff recommend that the Commission approve operation of Bruce A and B up to a maximum of 300,000 EFPH, and also place a licence condition on Bruce Power to develop a fracture toughness model for HEQ in excess of 120 ppm. This recommendation is based on the following.

That Bruce Power will continue to operate its units within the licensing basis and maintain sufficient safety margin at all times.

That the degradation mechanisms of pressure tubes are well understood by industry and CNSC.

That Bruce Power has a comprehensive inspection and monitoring program in place

specifically to monitor HEQ levels.

And that a robust regulatory oversight process is in place to ensure that Bruce Power will meet its commitments.

As an agent of the Crown, the CNSC understands the importance of building relationships and consulting with Aboriginal peoples in Canada. The CNSC ensures that all its licensing decisions under the *Nuclear Safety and Control Act* uphold the honour of the Crown and consider potential or established Aboriginal and treaty rights.

The Bruce site lies within the traditional territories of the Métis Nation of Ontario, the Historic Saugeen Métis, and the Chippewas of Nawash Unceded First Nation and the Saugeen First Nation, who together form Saugeen Ojibway Nation.

In September 2017, CNSC Staff sent letters of notification to SON, MNO and HSM in addition to the Union of Ontario First Nations and the Chiefs of Ontario. CNSC Staff met with SON, the MNO and the HSM to discuss the application, the process for getting involved, and to better understand their concerns related to the Bruce site.

Follow-up information, including the licence renewal CMD and the EA report, was sent to all

groups in February 2018.

Bruce Power has a formal relationship with each of SON, the MNO and the HSM through established protocol agreements. These agreements provide the framework for the continued collaboration between Bruce Power and each group.

CNSC Staff and Bruce Power have continually engaged with SON, the MNO and the HSM, both individually and jointly, and will continue to do so throughout the life cycle of the facilities.

All of the identified indigenous groups have been encouraged to participate in the review process and in the public hearing to advise the Commission directly of any concerns they may have in relation to this licence application.

CMD 18-H4.B provides additional information related to SON concerns.

The CNSC continues to meet with indigenous groups to encourage and maintain productive and respectful relationships.

CNSC has engaged extensively with SON on impacts the Bruce facility is having on the environment. As part of our ongoing collaboration, a meeting was held in March 2018 where CNSC Staff met with SON to develop specific areas of collaboration to

address their concerns, including those related to the 2018 licensing hearing.

While there remain differences of opinion between CNSC Staff and SON on the impacts the Bruce facility is having on the environment, we have identified constructive activities, and both parties are committed to working together.

CMD 18-H4.B provides the details on collaboration with SON to address its concerns. These include specifically the development of a study and analysis program to reduce uncertainties on potential environmental impacts, the participation of SON in environmental monitoring activities, and the study of available mitigation measures.

Additional collaboration such as outreach, sharing of CNSC inspection results and coordinating meetings with Crown agencies involved in oversight on nuclear matters in SON territory have also been identified.

CNSC Staff will work with all indigenous groups on their concerns.

Bruce Power has requested a 10-year licence period. CNSC Staff have assessed the request and have considered the following.

First, Bruce Power has demonstrated

continued safety satisfactory performance and a commitment to continue to improve performance in all safety and control areas as well as implement the PSR commitments.

Second, there is ongoing surveillance and comprehensive inspection activities performed by CNSC Staff at the Bruce site.

Third, annual reporting in the regulatory oversight report for nuclear generating sites to the Commission provides the public with frequent updates regarding the CNSC regulatory oversight activities and Bruce Power's operation, and this also allows the public to participate in the proceedings to present their views on the performance of the licensee.

And finally, the use of a 10-year licence period for nuclear power plants is aligned with international practice and benchmarks.

Based on these facts, CNSC Staff are recommending a 10-year licence period.

Based on the assessments of Bruce Power's safety performance, CNSC Staff conclude that, as per section 24(4) of the *Nuclear Safety and Control Act*, Bruce Power is qualified to carry out the activities authorized by the licence and, in carrying

out the licensed activities, Bruce Power has made, and will continue to make, adequate provision for the protection of the environment, the health and safety of persons, and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.

CNSC Staff recommend that the Commission accept the conclusions and recommendations presented in CMD 18-H4 and exercise its authority under the *Nuclear Safety and Control Act* to renew the licence and to authorize Bruce Power to continue to operate Bruce A and B nuclear generating stations for a period of 10 years.

CNSC Staff also recommend that the Commission consolidate the licences for industrial radiography, the Class II irradiator facility, and the consolidated use of nuclear substances into the power reactor operating licence.

Finally, CNSC Staff recommend the Commission to authorize Bruce Power to operate Bruce A and B up to a maximum of 300,000 Equivalent Full Power Hours.

Furthermore, CNSC Staff recommend that the Commission place the following conditions as part of the licence renewal.

To implement the integrated implementation plan resulting from the periodic safety review that supports this licence renewal application.

To demonstrate that pressure tube fracture toughness will be sufficient for safe operation beyond 120 ppm.

To implement a return to service plan for refurbishment activities.

To obtain authorization from the Commission or delegate to remove regulatory hold points during the return to service.

To conduct another periodic safety review as part of the next licence renewal.

And finally, to direct CNSC Staff and Bruce Power to work with indigenous groups to address their areas of concern.

CNSC Staff also recommend that the Commission authorize the delegation of authority as indicated in two proposed licence conditions on this slide.

The first is Licence Condition 3.2 for restart after a serious process failure, and the second is Licence Condition 15.5 for the removal of regulatory hold points related to return to service.

The Commission may delegate authority

to CNSC Staff with respect to the administration of licence conditions or portions thereof. CNSC Staff recommend that the authority be delegated to the Executive Vice-President of the Regulatory Operations Branch. This is the same as what has been delegated for other power reactor operating licences.

This concludes our presentation.

Thank you, Mr. President and Members of the Commission. We are prepared to respond to any questions you may have.

THE PRESIDENT: Thank you.

I think we're going to take a 10-minute break, and we'll see you in 10 minutes.

--- Upon recessing at 8:18 p.m. /

Suspension à 20 h 18

--- Upon resuming at 8:34 p.m. /

Reprise à 20 h 34

MR. LEBLANC: Thank you. We'd like to resume.

Thank you.

Just so that you know where we're going, we had planned three interventions tonight and we plan to do those three interventions as a minimum.

After that, if time remains, we may do a few of the written submissions.

And I have to stop so we can watch a bit of the end of the hockey game for some of you.

--- Laughter / Rires

MR. LEBLANC: Thank you.

THE PRESIDENT: Okay. So, the first presentation is by the Municipality of Kincardine as outlined in CMD 18-H4.66. I understand that Mayor Eadie will make the presentation.

Mayor Eadie, over to you.

CMD 18-H4.66

**Oral presentation by the
Municipality of Kincardine**

MAYOR EADIE: Thank you, Mr. Binder.

And I want to say for the record, my name is Anne Eadie, and as Mayor of the Municipality of Kincardine, on behalf of our Council and our community, I am presenting tonight to show our strong support for Bruce Power's 10-year licence renewal.

So, welcome to our beautiful lakeside Town of Kincardine. Our Municipality of Kincardine is proud to be the host municipality for the Bruce Power

site and an estimated 35 to 40 per cent of Bruce Power's employees live within our boundaries.

So, the next slide is Open Communication. Bruce Power has demonstrated very open, transparent communications with our municipality and has a very active outreach program within the region. Regular updates are provided to our councillors and staff along with collaboration on a wide range of broader issues facing the region.

In 2015 we strengthened our ties and signed a Memorandum of Understanding with Bruce Power to build on our already successful relationship. Areas of the Memorandum of Understanding include, but are not limited to, emergency preparedness, economic development and community outreach.

Just a minute here.

So, now I'm going to focus on Emergency Preparedness. The Municipality of Kincardine places great importance on emergency preparedness and we work closely with Bruce Power on many aspects of it.

And you can see in the slide some of the examples of collaboration and a few of them I'll just highlight. The planning and distribution of potassium iodide pills to residents, our annual

community safety guide which is updated each year, it's very good, our joint website bepreparedgeybrucehuron.com.

It's continued on the next one. There's a collaboration working with local school boards on updating their emergency plans. There's been the establishment of a regional emergency interoperability group to enhance public safety.

And I'm going just to highlight the exercise Huron Resolve. This is a provincial emergency exercise that we had involving 500 people from 30 municipal, provincial and federal organizations. As Deputy Mayor and Mayor, I have participated in several emergency exercises, but Huron Resolve was on another level demonstrating our existing interoperability to the region -- or in the region, it demonstrated the expertise available at all levels and how the Provincial Emergency Operating Centre, or PEOC, coordinated with participants. So, I found that very valuable and I understand there will be a similar exercise next year.

I want to also mention Bruce Power's fire training facility is available to our municipal fire department and other municipal fire departments.

So, the next slide is Economic

Development. So, Bruce Power is actively promoting economic development not only in our municipality, but in our whole local region.

Presently Bruce Power is constructing a new office and training complex in the Town of Kincardine for over 400 workers. Also for the MCR, Bruce Power is encouraging nuclear supply chain companies to set up local operations in the area.

Already new suppliers have moved into our municipality setting up local offices and creating more job opportunities for local residents.

We really appreciate this Bruce Power initiative. Over 40,000 square feet of existing underutilized commercial and industrial space has been filled to date and this is helping with our growth and plan our growth as well.

For better communication and planning of growth in our communities, Bruce Power led the establishment of the Nuclear Industry Advisory Committee for our larger region. Everyone receives regular updates on Bruce Power's life extension program and supplier expansions.

And then, as has already been mentioned by Bruce Power, there's planning underway for the Applied Research and Innovation Centre in

Southampton as part of this whole economic development initiative for the region.

So, for Community Outreach. As this slide indicates, the vast majority of residents in the local area support Bruce Power's life extension program and a high percentage agree that the Bruce Power facility operates safely.

Bruce Power's support of our physician recruitment program is crucial to our health services in the municipality. Bruce Power has contributed both financially and with staff time to this joint initiative with our neighbours, Saugeen Shores, and local Indigenous people are also at some of the meetings of this committee.

With a full-time recruiter, we have had more success in recruiting and retaining doctors in our rural area. Previously we have had too many people with no access to a family doctor and we appreciate Bruce Power's leadership in this area.

Bruce Power is also very supportive of our current Huron Shores Hospice initiative.

So, next we have the Corporate Social Responsibility. Our community benefits tremendously from Bruce Power's corporate social responsibility program and includes our hospital, education and our

not-for-profit organizations.

I'm just going to give a few examples. For example, although we are a multicultural community, we proudly celebrate our Scottish roots with an annual Scottish Festival. Bruce Power is the title sponsor.

Bruce Power leads with its own break-the-silence campaign to promote mental health awareness.

And I'm going to also refer to the environmental side. So, in addition to its required environmental monitoring and standards, Bruce Power has an environmental and sustainability fund and promotes other environmental initiatives such as our Phragmites Management Plan. Bruce Power partners with us and the Lakeshore and Coastal Centre and we're making great progress with our phragmites control.

The deer program for local students is another example. This program has been going on for years and it's very important to children. It's not often that they get a chance for hands-on environmental activities.

So, in conclusion. The Municipality of Kincardine supports the 10-year licence renewal application for Bruce Power for many reasons ranging

from its safety first commitment for its workers, our residents and the environment, to its ongoing dedicated support of our local economy, our local health care and community organizations.

Thank you.

THE PRESIDENT: Thank you very much.

Okay. We'll open up the floor for questions. Ms Velshi?

MEMBER VELSHI: Thank you, Mr. President and thank you, Mayor Eadie.

You spoke a bit about emergency preparedness. I wondered if you could share with us the preparedness of your community with respect to the Bruce implementing plan as a result of the Provincial Nuclear Emergency Response Plan that was recently issued and where are you at with that?

And Bruce Power did talk about the supports they're providing you and Saugeen Shores, but I thought I'd like to hear from you first-hand how you're coming along with that, please?

MAYOR EADIE: So, our staff at the Municipality of Kincardine is updating our emergency plan to fit with the new PNERP and Bruce Power, of course, is assisting us with this.

When it comes to anything with nuclear

emergency planning, we work very closely with Bruce Power.

So, this is underway and hopefully -- I'm trying to think -- I think the changes with the zoning, the renaming of all the zones, that new 20-kilometre zone, the contingency planning zone I think it's called, that's underway and I don't think it will take that long for our emergency plan to be updated. The main thing is the renaming of all the zones.

With our emergency plan, our evacuations have been thoroughly planned. I mentioned the regional emergency interoperability group. Our Director of Emergency Services, along with Chief Eagleson, the fire chief in Saugeen Shores, they're the co-chairs of this group and at the start it was Bruce Power, the Municipality of Kincardine and Saugeen Shores and it's expanded to include all emergency services for Bruce-Grey and Huron. And the purpose, of course, is how can we improve the rural interoperability?

There is a grant and they hope to have the study completed by December, 2018 as to how rural interoperability can be enhanced.

I hope that gives you some... Is

there anything else?

MEMBER VELSHI: Sorry. I don't know if you've had a chance to look at some of the interventions we have got around emergency preparedness, and I'm thinking particularly of an intervention by the Canadian Environmental Law Association, CELA.

MAYOR EADIE: Sorry, I haven't read it.

MEMBER VELSHI: Okay. I'm not sure whether they are on the agenda tomorrow or the day after. But I don't know if you or your staff are going to be around because they do raise a number of concerns and issues they have about the adequacy of the local-regional emergency plan.

I was just interested to hear your thoughts.

MAYOR EADIE: So having done the drills and exercises and attended various meetings, each time I do I am very confident that our local emergency plan is very robust. Each time we look at lessons learned or are there back-ups to back-ups we can put in place, whether it's through technology or just old fashioned planning.

I think our co-ordination with all our

groups, with our local police, our local municipalities, it has always been very good.

But I think with each drill and exercise we do, we take it to another level, notice things that maybe we can improve. But on the whole, I have every confidence in it.

THE PRESIDENT: Questions?

Just for information, CELA will be presenting tomorrow at 1:30. As a resident, you will likely be impacted the most. I thought you would have a strong view about whether there is something to learn from their arguments.

And the Office of the Fire Marshall also will be with us.

So this topic will be discussed in the next three days extensively.

MAYOR EADIE: Don't worry, I intend to be here as much as possible and I'm sure some of our other staff will be as well.

THE PRESIDENT: Okay, thank you.

Questions?

Member Demeter?

MEMBER DEMETER: Thank you, Mayor Eadie, for your presentation.

I'm trying to get my head around some

of the jurisdictional issues between county and municipality.

As I understand it, within the Municipality of Kincardine, that includes Inverhuron.

Is there a political representative or an elected representative from Inverhuron or does one of your Councillors represent that community?

MAYOR EADIE: Yes. So Councillor Ropell represents Ward 3 and Inverhuron is kind of split between Ward 3 and Ward 2.

MEMBER DEMETER: Okay.

MAYOR EADIE: And we have Councillor McKee from Ward 2 as well.

And then all the Councillors at Large. So the Mayor is at Large, the Deputy Mayor and we have other Councillors at Large. They represent everybody in our whole municipality.

It is confusing because we have the Town of Kincardine, which we are in right now, and the Municipality of Kincardine goes to nearly Saugeen Shores and inland quite a bit as well. And we are divided into three wards and approximately half our Councillors are Ward Councillors, so they have a specific area and they are elected from their Ward. And then the other part is elected at Large.

So on Council, the majority of Council represents all the areas in the Municipality.

MEMBER DEMETER: Okay.

MAYOR EADIE: So Inverhuron is well represented.

MEMBER DEMETER: This may put you on the spot but we have an intervenor from Inverhuron who is quite opposed to the licence applicant because of emergency preparedness.

I don't know if you have had a chance to review that.

MAYOR EADIE: Yes, he has come to Council several times.

MEMBER DEMETER: That's what I wanted to ask, is what interaction this individual, who is going to be presenting the intervention, has had with their local representatives.

That's what I was going to ask actually.

MAYOR EADIE: We have had lots of contact.

I'm assuming you are talking about Mr. Bourgeois?

MEMBER DEMETER: I am, thank you.

MAYOR EADIE: He is doing a

presentation. He came to Council a few weeks ago. He had a lengthy presentation. I actually read it all, as did I'm sure other members of Council.

Our staff replied to his concerns.

You have to know that we have our Director of Emergency Services. He's our Fire Chief. But we also have a person totally dedicated to emergency management in the nuclear field, fulltime. And that's thanks to Bruce Power support that we are able to have a fulltime person, as I know some municipalities, their Fire Chief is totally in charge of emergency management. We are very fortunate that we have a fulltime staff able to look at the PNERP, like with the distribution of KI pills and all that is needed in nuclear management. We have one fulltime person and other staff as needed.

So Mr. Bourgeois, he presented his case. He would like a health study performed in Inverhuron for a baseline health study. And he has other safety concerns. Some of it was technical. So I told him I think it is more appropriate that it's presented at the hearing. It was beyond our level of technical expertise.

He would also like a permanent shelter built right at Inverhuron for safety. That's one of

the things from his presentation as well.

Our staff did reply to specific concerns, and I did say to him that there are certain parts of your emergency management -- we are as transparent as we can be, but certain parts of it are confidential, you know our co-ordination. We try to be as transparent as we can and provide our residents with all the information they want. And I feel our staff has done that.

MEMBER DEMETER: Thank you. I wanted to get a sense of opportunities for interaction with local representatives and you have provided the answer. Thank you.

MAYOR EADIE: Okay. I just wanted to finish on that regard by saying our Council is open and transparent, so anybody can have a delegation to our Council. They just have to notify our clerk and come and do a presentation, and that is what he has done.

MEMBER DEMETER: Okay.

MAYOR EADIE: Thank you.

THE PRESIDENT: Thank you.

Ms Penney? Mr. Berube?

MEMBER BERUBE: First of all, I would like to thank you for coming. It's really essential

that we hear from community leaders, especially those areas that are really affected by the licensing requirements that we are processing at this point.

One of the questions I have -- and I just want to be really clear on this, very, very clear on this -- is: Are you and the Council fully satisfied, satisfied, very confident, confident with the current safety plans and support that you are getting from Bruce Power itself at this point?

MAYOR EADIE: Yes. I can elaborate if you wish.

I've been made aware of their -- we've been up there to see their emergency operations. We've heard all about their plans. And any time we ask, all we have to do is ask if we have any questions. They help us in looking at our own plan and anything we want to do.

So I am very confident.

And I am confident with their whole process. I didn't come from a nuclear background, like many people around here. I didn't have relatives working there. I came from a traditional farm background here and I was a teacher. So I had many, many questions to ask when I first went into politics.

And one of them was around nuclear

safety. I asked and asked and I learned about the back-up to the back-up to the back-up. Then I learned tonight there is another back-up that is coming into place and will soon be complete.

So they are continuously monitoring and they help us immensely with our own plans. The co-operation is wonderful.

THE PRESIDENT: You mentioned something about interoperability. And I also know in your presentation you talked about the ALERT FM.

So I want to know how the new wireless alert system works there and did it replace the ALERT FM?

Maybe Bruce can help on this one too.

This province-wide or Canada-wide alert to wireless devices.

MR. SAUNDERS: Yes, Frank Saunders, for the record, on the ALERT FM.

It won't replace the ALERT FM. ALERT FM is intended to work when other means of communication don't work, so when cell towers are down and those things. Then the ALERT FM will still work, both for our employees and for the general population. As you know, it covers both.

So ALERT FM will stay in place.

The public alert cell phone broadcast was I think a dismal failure everywhere, including here. They said it worked on Rogers but it didn't work on my Rogers phone.

And I was watching with great anticipation. As you know, we lobbied to have some kind of a cell alert system with the agency a couple of years ago. They didn't choose the method that we proposed, but I'm sure they will get this one working as it goes forward.

In today's age I think you really need the cell piece because so many people don't even have a home phone any more. So without the cell piece, you're just missing it.

THE PRESIDENT: They are working on that, you said?

MR. SAUNDERS: They are working on it. They claim they are going to do another test as soon as they resolve what the issues were.

I don't have any inside information on what the issues were. But we'll see.

THE PRESIDENT: Okay.

Any other questions?

So thank you very much.

MAYOR EADIE: Thank you for allowing

me to present.

THE PRESIDENT: The next presentation is by the Lake Huron Fishing Club, as outlined in CMD 18-H4.64.

I understand that, Mr. Hahn, you will make the presentation. Over to you.

CMD 18-H4.64

**Oral presentation by
Lake Huron Fishing Club**

MR. HAHN: Thank you very much.

Good evening, Mr. President and fellow Commissioners.

The Lake Huron Fishing Club is a volunteer organization that was founded 35 years ago this year. We have over 400 members and in our 35 years we have invested over \$1 million into programs for stocking the main basin of Lake Huron with trout and salmon, and environmental initiatives such as tree planting, cattle fencing and stream rehabilitation. Many of our projects as it pertains to environmental stewardship would certainly not be able to happen without the generosity of Bruce Power. They have been financially able to support a club. It's all

volunteers. Every nickel and dime we raise is, you know, just done through volunteer work, barbecues, fish fries, et cetera. So their generosity has certainly helped the club do a lot of tree planting and stream rehabilitation.

And one thing that the club feels and why we overwhelmingly support their application is that when we ask Bruce Power to support, for instance, a stream rehabilitation project, one of the first questions they ask us is: What will be the immediate impact to mother nature, but more importantly, how will we be able to measure long term what the effects of our stream rehab it has done or did do? So they are very conscientious and they hold us to task on what we are doing. They don't want us to just, you know, go plant trees on the side of a stream, they want to know what will be the long-term effects, positive effects by us planting the trees. So we are very grateful for that.

Five years ago we approached Bruce Power. One of the club members had an idea to start a school hatchery program, so we asked Bruce Power to fund three aquariums that we would put in three local schools so children would have an in-class fish hatchery, if you will, and they would raise salmon

throughout about a six-month period and then they would release the salmon, the students would release the salmon back into Lake Huron. And of course Bruce Power, they gave us 100 percent support.

And it was such a success that we have grown in those short five years, this year in 2018 we have 47 schools that have hatcheries in them. So the amount of youth that were able to raise these fish and just get a little bit closer to Mother Nature instead of playing video games and stuff like that, we feel that the impact that this is going to have on the youth is -- like the long-term effect is just huge. And Bruce Power has committed that they will support -- we had to provide a 10-year stocking plan to the Ministry of Natural Resources, and basically rearing fish anywhere is part of that stocking plan, and so we had to put a number of how many schools we thought we could get to. So I kind of bumped up the number to 100. Never in my wildest dreams did I realize that in five years we would already be halfway there and Bruce Power has committed to going to 100 schools within the next five years. So I think they should be commended for that as well.

For decades the club -- well, basically almost since its inception, the Lake Huron

Fishing Club has been lobbying to remove a dam in Walkerton called the Truax Dam. It is a man-made barrier and virtually no warm water -- well, 100 percent no warm water species can pass through that dam, and migrating salmonids such as rainbow trout or salmon, they can on occasion get over top of that dam and up into the pristine waters.

Eight years ago with the Ministry of Natural Resources we did a telemetry study where we impregnated spawning rainbow trout, migrating rainbow trout, 30 trout, male and female, 15 of each, we put the probes into the fish and the Ministry used a helicopter to monitor the migration of these fish. Of the 30 fish that were impregnated, all 30 ended up coming to a stop at the bottom of the Truax Dam. Not a single fish made it over there.

So eight years later Bruce Power has committed to fund the partial removal of the Truax Dam 100 percent. So what this will do is allow all warm water species and all migrating salmonids to move freely up and down the river, up into pristine waters where they can spawn. So this is a massive project. It will certainly be the biggest project that the Lake Huron Fishing Club has ever been a part of as far as environmental stewardship and I can assure you it

would have never happened without the generosity of Bruce Power.

I would like to add to that -- just bear with me, please. I'm going to read this verbatim because I don't want to mess it up.

Bruce Power will be using this project as compensation for fish losses that occur at the station due to withdrawal of cooling water from Lake Huron. The Lake Huron Fishing Club has had several opportunities to discuss these impingement and entrainment losses with Bruce Power's environmental staff and we are very satisfied that the level of harm that occurs is minimal, especially considering it is only an extremely small fraction of what is commercially harvested from the lake each year. The Club is excited and very proud to work with Bruce Power in its efforts to offset these fish losses.

Bruce Power should be commended for their impeccable record of environmental safety and stewardship as well as for how much of a positive impact they have on our community. We support Bruce Power and request that the CNSC grant them the renewal of their operating licence so they can continue to be environmental leaders and provide Ontario with clean electricity that does not pollute the air we all

breathe.

Thank you.

THE PRESIDENT: Thank you.

Questions...? Ms Penney...?

MEMBER PENNEY: I am very interested in hearing about your telemetry study and then the removal of the dam, very interesting work. So the telemetry study was part of trying to determine the damage that the dam was causing?

MR. HAHN: It was. But just to be clear, it was long before the Lake Huron Fishing Club had developed a relationship with Bruce Power. This was the club asking the Ministry of Natural Resources at the time to validate what we had been asking -- or what we had been saying all along, that there was virtually no fish that were able to migrate over it, and so the Ministry took it upon themselves, they funded it, we just worked as volunteers alongside them as in-kind support. And that was -- I mean it just happened that that scientific research now should -- I believe it should be allowed to be used by Bruce Power because it was done by the government. It was a test done by the government.

MEMBER PENNEY: And I'm assuming when you say that the habitat that's going to be opened up

is part of compensation, I'm assuming that's part of the Department of Fisheries and Oceans authorization?

MR. SCONGACK: James Scongack, for the record.

That's correct. So maybe I can just provide a bit of additional background. One of the things that Mr. Hahn noted was that the Saugeen River is a world-renowned fishery. So that's correct, this project will, we believe, improve fish habitat by up to 15,000 kg. When we compare that to the impingement and entrainment that we estimate from the site based on 40 years of data, that's about 2,400 kg of fish. So we are obviously very excited about this program, in fact hot off the press, it was just approved by Brockton Municipal Council tonight. It will be announced tomorrow, so the media can't report on it until tomorrow morning. But we are very excited about this program and it's one of many programs we look forward to continuing with the Lake Huron Fishing Club.

MEMBER PENNEY: And I'm assuming there will be monitoring after the fact to demonstrate and verify that the habitat is being utilized?

MR. SCONGACK: That's correct, yes. We have an ongoing multi-year monitoring program, so

the initial dam removal will be the focus of the first year and then we have a detailed monitoring program to verify that.

MEMBER PENNEY: I'm only allowed one question, so I won't ask you anymore. Wonderful program, congratulations.

MR. HAHN: Thank you very much and thank you for allowing me to speak.

THE PRESIDENT: Well, we haven't finished with you yet.

--- Laughter / Rires

THE PRESIDENT: So, first of all, who built that dam and why? And did they not do an environmental assessment prior to building this dam?

MR. HAHN: Well, probably if we had followed the same environmental risk assessment we follow, you would never build a dam like that again I think is the right answer, Mr. Binder.

THE PRESIDENT: What was the purpose? Is it a hydro dam, is it --

MR. SCONGACK: No, it's not a hydroelectric dam. I think it's a 60-year-old dam. We can certainly provide you some additional history on the dam.

THE PRESIDENT: Go ahead,

MR. HAHN: It was actually built -- there was a mill beside it. It was a waterwheel. It was for industry. It powered the mill. That was the original reason for the dam.

THE PRESIDENT: And there was no environmental assessment in those days.

MR. HAHN: Not back then, sir.
Nothing.

THE PRESIDENT: I think somebody just can maybe provide more information. Go ahead.

--- Off microphone / Sans microphone

THE PRESIDENT: Sorry, okay. So any other questions to this intervener?

Well, first of all, I like the school, you should go national with this. Kids with growing things, that's a great kind of a thing and I presume you will continue. Canada has all kinds of lakes that could use some stocking up.

MR. HAHN: Yes. There's -- we actually have schools like 300 or 400 km away. We have one school on Manitoulin Island. Like our reach is not just Grey Bruce County, but none of this would ever happen without the generosity of Bruce Power.

THE PRESIDENT: Did Darlington and Pickering take a hint?

--- Laughter / Rires

THE PRESIDENT: That's for another conversation. What I would like to ask you, though, is you are a fishing club, do you have any statistics about whether fishing is getting better, getting worse, staying the same, lake-wide?

MR. HAHN: What I can tell you is what we know as a club is about 15 years ago what we describe as the perfect storm occurred in Lake Huron. You had the introduction of zebra and later quagga mussels along with the round goby. At the exact same time you had -- which these invasive species have devastated the lake bottom. At the same time you had municipalities cleaning up their sewage effluent, so the amount of phosphorus that was going into the lake plummeted. So with the zebra and quagga mussels, the water clarity went from -- I don't have the data in front of me, I apologize, but I believe in 1986 the water clarity in Lake Huron was 22 feet and in 2008 it was 98 feet with however they measure water clarity. So there was just a lot of things happened at the same time. With the advancement of the quagga and the zebra mussels, the Alewife, which was another invasive species that had been in the lake for 25 years, it crashed. So when it crashed, the Chinook Salmon

fishery collapsed. All I can tell you is based on what we see as a fishing club, the lake is definitely stressed, it's under siege by these invasive species, but I do believe Mother Nature is somewhat stabilizing. We are seeing a rise in pickerel numbers, we are seeing a rise in perch numbers. Information from the MDNR, the Michigan Department of Natural Resources, they have upped the limit on their walleye for anglers to take because there are so many of them. The rainbow trout fishery seems to be thriving, yellow perch seems to be doing much better. It's stabilizing, but I don't believe we will ever see the --

THE PRESIDENT: What about whitefish?

MR. HAHN: Whitefish, as anglers we don't -- whitefish is a deepwater fish. I can't really comment much to it other than the Fisheries Management Council that I sit on, you know, every time we sit with them they say that the lake biomass, the amount of prey fish -- or baitfish, sorry, that are out there is at an all-time low. Like I don't have the percentage, but it's like single digits compared to what it was 25 years ago.

THE PRESIDENT: Okay. Anything else? Thank you. Thank you for the intervention.

MR. HAHN: Thank you very much.

--- Pause

THE PRESIDENT: The next presentation is by the South Bruce Grey Health Centre, as outlined in CMD 18-H4.68 and H4.68A.

I understand that Mr. Rosebush will make the presentation. Over to you.

CMD 18-H4.68/18-H4.68A

Oral presentation by

South Bruce Grey Health Centre

MR. ROSEBUSH: Thank you very much, Mr. Binder, for the opportunity to be here to speak on behalf of the 10-year licence renewal application for Bruce Power, who have been a tremendous supporter of healthcare throughout Bruce and Grey counties.

My name is Paul Rosebush, I am the President and CEO of the South Bruce Grey Health Centre, and our mission, as it says on the slide, is quality care close to home.

Our organization serves a community of upwards to 45,000 people on an annual basis, plus seasonal residents and tourists that add a tremendous volume to the demand for healthcare in Bruce County,

10,000 seasonal residents and upwards to 30,000 tourists a year in Bruce County.

We operate four rural hospital sites across Bruce County and Grey County and they include Chesley, Durham, Walkerton and of course Kincardine. And the Kincardine Hospital, which is not too far from the hearings tonight, is the closest hospital to Bruce Power and its employees. Because of that we have developed a strong relationship with Bruce Power.

One of the important steps that we took on our journey to partner with Bruce Power was to sign an MOU in 2015 -- and that Memorandum of Understanding I believe is in your package -- and it speaks towards improving rural healthcare and enhancing emergency services in our area. Since the Memorandum of Understanding was signed at that time in 2015 we have had a number of ongoing activities in which we have coordinated our efforts, and that includes emergency preparedness, community outreach and physician recruitment, of which Mayor Eadie also spoke.

In terms of emergency preparedness enhancements with our organization and in Bruce County, in 2016 we were delighted to receive a substantial investment of \$75,000 from Bruce Power to

help us upgrade and transform one of our emergency rooms so that it could specifically accommodate radiation type emergencies. We have also completed initiatives such as I just mentioned, the state-of-the-art decontamination room is what we call it, our Code brown room, and that's used on an ongoing basis for training purposes involving our staff as well as Bruce Power staff in the unlikely event of an emergency. We regularly have our teams work with Bruce Power teams to update procedures and programs and training, and it is really something to see the drills in action.

Bruce Power also hosted for our organization and healthcare providers across Bruce and Grey and Huron counties meter training for nurses as well as physicians to educate our staff and healthcare professionals on proper monitoring protocols. Bruce Power has also provided substantial educational awareness to our organization, the South Bruce Grey Health Centre, regarding potassium tablets that had been distributed to residents. And there is also yearly training between Bruce Power and South Bruce Grey Health Centre staff that continues to be ongoing and we develop new training plans to meet new objectives on a yearly basis.

Being in a rural community, one of our biggest areas of need is for physicians. We know that in Ontario there are not enough physicians presently to support all the communities up to the levels that we would like to see and so it has been very helpful to not only our organization in making sure we could staff a 24/7 acute care hospital in Kincardine but Bruce Power has allowed us to be able to beat our goals in providing that type of care by contributing to our physician recruitment program. That program is actually co-funded by Bruce Power and the municipalities, as Mayor Eadie said, but we are the direct benefactor of that investment.

Since 2016 that program has prevented the possibility of 7,000 patients, as the slide says, from having to go elsewhere to find their care. So primary care is one of the most important things that can be made available for people's health and well-being, and hospitals certainly want them to be used as backups for emergency support for healthcare conditions, and by bringing physicians in to support primary care, those physicians also work in our hospitals and provide the 24/7 emergency services. And that continued joint venture, as the slide mentions, ensures the sustainability of healthcare in

our communities and that's one of our priorities as an organization, to ensure that across Bruce and Grey counties we are providing the requisite level of care.

Community outreach is something that's important to Bruce Power. They support a number of health and wellness programs throughout our area, and their community investments over the years have indirectly supported our patients. As I just mentioned, if a physician comes in and is working at the clinic, that saves the emergency department from having to provide that level of care. All too often in rural communities primary care is provided in the hospitals, making it an ineffectual allocation of resources.

To raise awareness around mental health in particular, Bruce Power has donated more than \$80,000 to organizations directly working in Bruce and Grey counties on mental health initiatives and I am aware of their recent fundraising and that is going to increase that number substantially.

Bruce Power has also generously contributed \$1 million to our organization, the South Bruce Grey Health Centre for our Kincardine Hospital. That funding was allocated to us in 2013 and that money has been set aside for us to redevelop the

emergency room as part of our overall redevelopment effort at the hospital.

In summary, we are very proud to be a partner of Bruce Power. Not only are they a terrific neighbour, we're very confident from working with them on all the drills and training and exercises, we're very confident of their ability to continue to provide ongoing safe and reliable electricity generation.

Our partnership is a very strong one, in which we can count on one another in terms of training, support and ongoing emergency preparedness enhancements year over year. Ongoing work through our memorandum of understanding, which you folks have, will continue to build and help improve our communities in time. That work is going to continue and we have their commitment to do so.

Overall, the South Bruce Grey Health Centre supports Bruce Power's licence renewal application for 10 years, and we're delighted that they support healthcare to the degree that they do.

Thank you.

THE PRESIDENT: Thank you. Mr. Berube?

MEMBER BERUBE: First of all, thank you for your presentation and speaking on behalf of

Bruce Power.

What I'm curious about is your feelings on the ability to address the need to do a nuclear triage, if necessary. You'd be the first line of defence within the region. It's really critical that your facilities know how to recognize and diagnose very quickly.

The second part of that is I'm well aware that regional hospitals, or small regional hospitals, use a lot of locums, and how do you actually deal with the locum issue in your ADEs to make sure they're up to speed?

MR. ROSEBUSH: The first part of the question deals with our ability to triage and have trained staff be able to recognize those types of emergencies. Part of our exercises and annual drills that we have with Bruce Power we coordinate with their staff to bring in a patient or a mock patient to a scenario. They come into the back of the building where this code brown room is supported, they're dropped off at the door, and then they start interacting with our teams in person.

That room is so well constructed now that it provides not only safety, but it has all the diagnostic tools in there that are necessary to help

with that type of triaging.

Our physicians are involved in that, and they gown-up and they go into the code brown room and they work with the Bruce Power people on what the presentation is and determine what the best course of treatment is.

So am I confident in the triage ability? Yes, I've seen it in action. It's something that is drilled every year. Our staff in Kincardine are the primary focal point for that training for South Bruce Grey Health Centre even though we've spread that training around to our other sites. But we have the right equipment and we have the right trained personnel, and our physicians and our nurses partake in that training so that we can provide that triage work.

THE PRESIDENT: Go ahead.

MEMBER DEMETER: Thank you very much for your presentation. Kincardine is the closest hospital to the nuclear power plant. It's a hospital that, as I understand it, doesn't have nuclear medicine clinical services, which a lot of hospitals would draw on for their radiation safety officer.

So at our facility our radiation safety officer, if we receive someone, would go and do

all that.

So what do you do in lieu of not having a designated radiation safety officer who is used to dealing with spills and contamination and decontamination? What's your go-to person for that?

MR. ROSEBUSH: There's two options for our organization. We're a rural healthcare facility. We do not have the benefit of funding to have that type of expertise on our staff.

What we do is we rely on Bruce Power to provide that on their end, and then we also have tertiary centres that we can refer our patients to. There's ongoing dialogue between all three levels: Bruce Power; our hospital; and, a tertiary centre to ensure that we've got the right people looking at these issues.

MEMBER DEMETER: So just to be pragmatic. If you had an influx of 10 people who may or may not be contaminated or exposed, who at your facility would monitor their clothing, their effluent, the decontamination to make sure that that was all...? Like, would you get someone from Bruce to come over or would you --

MR. ROSEBUSH: For that level, we have infection control specialists and we have regular

training where they have to gown-up and be prepared to handle these things. Based on the issues that come through the door, that will determine the level of precautions that are necessary to deal with those situations. So we do have that level of staffing in Kincardine.

MEMBER DEMETER: The infection control specialists take the METER training?

MR. ROSEBUSH: Yes.

MEMBER DEMETER: Okay, thank you.

THE PRESIDENT: So just to follow-up on this. So what did you do to upgrade your decontamination room? What was it before? What did you have to do to upgrade it?

MR. ROSEBUSH: When I came to the organization six years ago I was a little bit alarmed that a space that was so important to the overall healthcare of the community, the decontamination room, wasn't really a modern and well-equipped decontamination centre at that point.

So we worked with Bruce Power on ensuring that we were able to order the right equipment so that we could have the right stainless steel all around the room, the right beds, the right water to come in and so that we could decontaminate

people.

So it goes from everything from beds to water, how it comes in and how it is stored and put into a reservoir so it doesn't contaminate people. It's got all the equipment so that you could identify what level of radiation is there and it's closed off from the rest of the hospital so that you can segregate it.

So we were able to really outfit that room with the right type of diagnostic equipment, but also the right type of beds and cabinets that are necessary to ensure safety for everybody in that room.

THE PRESIDENT: Thank you. Ms Velshi?

MEMBER VELSHI: So other than drills and exercises, have you ever had to use your decontamination facility?

MR. ROSEBUSH: In the six years that I've been there, no.

MEMBER VELSHI: What about in the history of the hospital?

MR. ROSEBUSH: I have never been told -- oh, at one of our other sites a few years ago we had a Bruce Power employee that did come into one of our hospitals, and they felt that they might have had an exposure. We had the equipment there, we

contacted Bruce Power and there was no exposure as it turned out. But there was quick and effective communication to put that patient at ease.

THE PRESIDENT: So when the alpha incident happened, none of them went over to your place? This is the alpha contamination. Where did they go, the employees?

MR. SAUNDERS: There wasn't any medical emergency as part of the alpha, so they wouldn't have gone to the hospital, right? So the alpha contamination was really an assay requirement on our part to determine what level of uptakes, if any, that they had received. So that was done through like say taking samples from the individuals and sending them off to be processed.

So there was no --

THE PRESIDENT: So there was no need for a hospitalization or did they come --

MR. SAUNDERS: No. I mean, that all happens at work before they leave the area. So if you're contaminated, you're cleaned up right there.

The only case where a contaminated casualty might go to the hospital would be somebody who had a critical injury where you couldn't take time to decontaminate them or maybe had a broken leg or

something, so you couldn't really remove their browns and, in that case, you need to decontaminate them at the hospital under medical care.

But for normal radiation uptakes or for normal contamination, that's done at the plant and then it's a matter of determining what the uptake was for the individual.

We've never had an uptake sufficient that medical care would be required or anywhere remotely close to that.

THE PRESIDENT: Okay, thank you.

Any other questions? Thank you.

Thank you for your intervention.

MR. SAUNDERS: No.

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

MR. LEBLANC: So we have the time to do some of the written submissions. So in that context, I'm going to read through the list, a certain number of them this evening, and I'm going to ask the members if they have any questions. Obviously, those are written submissions, so any questions would be directed to either Bruce Power or to CNSC Staff in this regard.

So I'll let the members organize

themselves so they have access to the written submission binder.

Ready to go, Mr. President?

THE PRESIDENT: Yes, go ahead.

CMD 18-H4.2

Written Submission from

Big Brothers Big Sisters of Kincardine & District

MR. LEBLANC: So the first submission is from Big Brothers Big Sisters of Kincardine & District, it's in CMD18-H4.2. Any questions?

THE PRESIDENT: No.

CMD 18-H4.3

Written Submission from

Municipality of Morris-Turnberry

MR. LEBLANC: The next submission is from the Municipality of Morris-Turnberry, CMD18-H4.3.

THE PRESIDENT: No.

CMD 18-H4.4

Written Submission from

**International Association of Heat and Frost Insulators
and Allied Workers, Local 95**

MR. LEBLANC: The next submission is from the International Association of Heat and Frost Insulators and Allied Workers, Local 95, CMD18-H4.4.

THE PRESIDENT: No.

CMD 18-H4.5

Written Submission from

**International Brotherhood of
Electrical Workers, Local 804**

MR. LEBLANC: The next submission is from Unity for Autism -- no, I skipped one. Written submission from the International Brotherhood of Electrical Workers, Local 804, CMD18-H4.5.

THE PRESIDENT: No.

CMD 18-H4.6

Written Submission from Unity for Autism

MR. LEBLANC: The next submission is from Unity for Autism, CMD18-H4.6.

THE PRESIDENT: No.

CMD 18-H4.7

**Written Submission from
Bluewater District School Board**

MR. LEBLANC: The next submission is from Bluewater District School Board, CMD18-H4.7.

CMD 18-H4.8

**Written Submission from
Huron Chamber of Commerce -
Goderich, Central and North Huron**

MR. LEBLANC: The next submission is from Huron Chamber of Commerce - Goderich, Central and North Huron, CMD18-H4.8.

CMD 18-H4.9

Written Submission from

**Hydro Pensioners of Ontario, Georgian Bay District
Pensioners Association, Bruce Sub Group**

MR. LEBLANC: The next submission is from the Hydro Pensioners of Ontario, Georgian Bay District Pensioners Association, Bruce Sub Group, CMD 18-H4.9.

CMD 18-H4.10

Written submission from

Stewardship Grey Bruce Inc.

MR. LEBLANC: The next submission is from Stewardship Grey Bruce Inc., CMD 18-H4.10.

CMD 18-H4.11

Written submission from

Lake Huron Shoreline Tourism Marketing Partners

MR. LEBLANC: The next submission is from Lake Huron Shoreline Tourism Marketing Partners, CMD 18-H4.11.

CMD 18-H4-12

Written submission from

Labourers' International Union of North America

MR. LEBLANC: The next submissions is from the Labourers' International Union of North America, CMD 18-H4.12.

CMD 18-H4.13

Written submission from the

Municipality of Northern Bruce Peninsula

MR. LEBLANC: The next submission is from the Municipality of Northern Bruce Peninsula, CMD 18-H4.14.

CMD 18-H4.14

Written submission from the

Painters and Allied Trades of Ontario

District Council 46, Locals 1494/1590

MR. LEBLANC: The next submission is from the Painters and Allied Trades of Ontario District Council 46, Locals 1494 and 1590, CMD 18-H4.14.

CMD 18-H4.15

**Written submission from the
World Nuclear Association**

MR. LEBLANC: The next submission is from World Nuclear Association, CMD 18-H4.15.

THE PRESIDENT: Just to Bruce, you guys a member of the World Nuclear Association, and do you share in their common OPEX sharing? Can you speak to that a bit?

MR. SAUNDERS: Yes, Frank Saunders, for the record.

Yes, absolutely. We -- as you know, nuclear organizations worldwide share in the OPEX, so we receive routine OPEX reports both from INPO and WANO, and a number of other nuclear associations that provide such information as well.

So yeah, we have an actual program that we use to undertake a review of that OPEX. That program's actually audited by WANO in this case to see that, you know, from a nuclear industry standard point of view that we follow standard protocols, and they do issue objectives and criteria that we follow in that regard.

So yeah, it's very extensive.

THE PRESIDENT: Are all CANDU operators globally members of WANO?

MR. SAUNDERS: Yes.

MR. RENCHECK: And this will be one of the areas that we'll be looking to advance with artificial intelligence. We have historical records on the operations of nuclear units for the last 50 years in -- within all of these databases. By advancing technologies, we'll be taking full advantage of that to make sure that we have not only safer plant operations, but more effective and more efficient in the future.

THE PRESIDENT: Thank you.

MR. LEBLANC: Dr. Demeter?

MEMBER DEMETER: Thank you. Just a question for Bruce.

So in 2008 you sponsored the World Nuclear -- I guess they must have had a symposium or a meeting in Ottawa.

The Institute, sorry.

How frequently does this come to Canada, and do you have a sense of when it's coming -- you know, when it cycles back?

MR. SCONGACK: Yes, so it's James Scongack, for the record.

So just to clarify, when we talk about the World Nuclear Association, that would be the global equivalent of the Canadian Nuclear Association, so not to

be confused with WANO.

The summer institute happens on an annual basis, and it would be probably every eight to 10 years at tops that it would come to Canada. As Mr. Rencheck and Mr. Saunders noted, there's also a series of specific industry forums that operators have the opportunity to participate in, one in which, in particular, that Bruce Power played an active role in with WNA was following the events of Fukushima, was leading a global industry group looking at how the industry could enhance communications and coordination in events such as that.

And I should also note that the WNA held their annual conference last September in Toronto.

MEMBER DEMETER: Thank you.

CMD 18-H4.16

Written submission from Levitt-Safety

MR. LEBLANC: The next submission is from Levitt-Safety, CMD 18-H4.16.

CMD 18-H4.17

**Written submission from the
Westover Treatment Centre**

MR. LEBLANC: The next submission is from
the Westover Treatment Centre, CMD 18-H4.17.

CMD 18-H4.18

**Written submission from the
Carpenters' District Council of Ontario,
Local 2222, Goderich**

MR. LEBLANC: The next submission is from
the Carpenters' District Council of Ontario, Local 2222, in
Goderich, CMD 18-H4.18.

CMD 18-H4.19

Written submission from ASI Group Ltd.

MR. LEBLANC: The next submission is from
ASI Group Ltd., CMD 18-H4.19.

CMD 18-H4.20

**Written submission from the
Municipality of South Huron**

MR. LEBLANC: The next submission is from
the Municipality of South Huron, CMD 18-H4.20.

CMD 18-H4.21

Written submission from the Town of Hanover

MR. LEBLANC: The next submission is from
the Town of Hanover, CMD 18-H4.21.

CMD 18-H4.22

**Written submission from
Sheet Metal Workers' International Association,
Local Union 473**

MR. LEBLANC: The next submission is from
the Sheet Metal Workers' International Association, Local
Union 473, 18-H4.22.

CMD 18-H4.23

Written submission from Laveer Engineering

MR. LEBLANC: Next submission is from Laveer Engineering, CMD 18-H4.23.

CMD 18-H4.24

**Written submission from
International Brotherhood of Boilermakers**

MR. LEBLANC: The next submission is from the International Brotherhood of Boilermakers, CMD 18-H4.24.

CMD 18-H4.25

**Written submission from
Larry Miller, MP Bruce - Grey - Owen Sound**

MR. LEBLANC: The next submission is from Larry Miller, Member of Parliament for Bruce, Grey and Owen Sound, CMD 18-H4.25.

CMD 18-H4.26

Written submission from

Bill Walker, MPP Bruce - Grey - Owen Sound

MR. LEBLANC: The next submission is from Bill Walker, MPP for Bruce, Grey and Owen Sound, CMD 18-H4.26.

CMD 18-H4.27

Written submission from

Women's House Serving Bruce & Grey

MR. LEBLANC: The next submission is from Women's House Serving Bruce and Grey, CMD 18-H4.27.

CMD 18-H4.28

Written submission from

Special Electronics & Designs Inc.

MR. LEBLANC: The next submission is from Special Electronics & Designs Inc., CMD 18-H4.28.

CMD 18-H4.29

Written submission from JNE Consulting Ltd.

MR. LEBLANC: The next submission is from JNE Consulting Ltd., CMD 18-H4.29.

CMD 18-H4.30

Written submission from Framatome Canada Ltd.

MR. LEBLANC: The next submission is from Framatome Canada Ltd., CMD 18-H4.30.

THE PRESIDENT: So on page 2, they talk about we have two Canadian patent applications, with the first related to containment filter venting system, and the next one is for producing isotope.

Can you elaborate a little bit? What are they saying here?

MR. RENCHECK: Yeah, we are working with Framatome on confidential isotope production that will further enhance our abilities to interact with the medical community going forward, so we're looking at advancing and working with not just cobalt-60, but other isotopes now to expand that field of use and products in Canada.

And I'll ask Frank --

MR. SAUNDERS: We referred to the design

with Canadian Filter Vent. This is the company we've been working with to create that design, so they are --

THE PRESIDENT: So they still haven't got the patent? Is that what they're looking for?

MR. SAUNDERS: Yeah. Well, they will file patents pending and, as the design is completed and so forth, it'll move into final -- final patent, I assume. But that's -- that's kind of in their side of the world. We're interested in the design to install in the plant and of course they, I assume, as in any other business, would like to sell that to other plants and, therefore, want a patent on it.

THE PRESIDENT: Okay, thank you.

CMD 18-H4.31

Written submission from

Lakeside Process Controls Ltd.

MR. LEBLANC: The next submission is from Lakeside Process Controls Ltd., CMD 18-H4.31.

CMD 18-H4.32

**Written submission from the
Township of Georgian Bluffs**

MR. LEBLANC: The next submission is from
the Township of Georgian Bluffs, CMD 18-H4.32.

CMD 18-H4.33

**Written submission from
Sargent & Lundy Canada Company**

MR. LEBLANC: The next submission is from
Sargent & Lundy Canada Company, CMD 18-H4.33.

CMD 18-H4.34

**Written submission from the
Municipality of Arran-Elderslie**

MR. LEBLANC: The next submission is from
the Municipality of Arran-Elderslie, CMD 18-H4.34.

CMD 18-H4.35

Written submission from

Lisa Thompson, MPP, Huron-Bruce

MR. LEBLANC: The next submission is from Lisa Thompson, MPP for Huron-Bruce, CMD 18-H4.35.

CMD 18-H4.36

Written submission from the

International Irradiation Association

MR. LEBLANC: The next submission is from the International Irradiation Association, CMD 18-H4.36.

THE PRESIDENT: Go ahead.

MEMBER DEMETER: The written intervention brings up the importance of supply of cobalt-60 to medical facilities, and they talk about it being important for the world.

Can you give us a sense of Bruce's or perhaps Canada's contribution to the world cobalt medical supply?

MR. SCONGACK: Yes. James Scongack, for the record.

So we obviously work very closely with the IIA. The Canadian supply of cobalt-60 comes from our four

Bruce B units, and Pickering. Depending on the demand in any given year, that global supply coming from Ontario is between 40 and 60 percent, as high as 70 in some cases.

So one of the key things that Bruce Power and OPG have actually signed a joint collaboration agreement on is working with Nordion to look at alternate sources of LSA cobalt for radiation when Pickering reaches its end of life in 2024, and that's an active area that we're working together on.

MEMBER DEMETER: Thank you.

THE PRESIDENT: You know, that's an amazing stats, right, 60 percent world domination of this.

Is it because of this CANDU technology that allows you to do that? Because why not other NPP, let's say, outside of the CANDU doing that?

I'm trying to understand the advantage here.

MR. SCONGACK: Yeah. James Scongack, for the record.

So this is obviously, certainly, an area that other operators of other technologies are looking to see, you know, how could their plants be modified. For example, China announced last November a plan to look at what would be required in its units.

The CANDU units are obviously very well

positioned from a technical perspective, in particular looking at the -- specifically the design of the Bruce B units in Pickering. And actually, Darlington has some of the same characteristics of Bruce B where you can actually use -- equip the absorbers to utilize this.

Also, the time scale of our outage campaigns and fitting in the harvest fits in quite effectively, but certainly this is a -- this is a very strategic and important global role that Canada plays, and it's actually something that nobody talks about.

I mean, you talk about food irradiation in countries like Asia. You look at any kind of medical equipment getting sterilized anywhere in the world, chances are it came from a Canadian reactor, that LSA cobalt.

And of course, as Mr. Rencheck noted, we're now starting to produce High Specific Activity cobalt-60 in our Bruce B units. We'll start harvesting that in 2019.

And that High Specific Activity cobalt source was previously produced from Chalk River. Obviously, with Chalk River now reaching its end of life, that HSA will be harvested out of that and, by 2019, we'll be the -- probably one of the -- not probably. We will be one of the primary global suppliers of HSA cobalt, which is used in primarily brain cancer treatment, or brain tumour

treatment.

MR. RENCHECK: The fundamentals are is that we use cobalt-60 absorber rods to control neutrons and, in doing that, we've designed rods such that they can be removed and disassembled for the various Low Specific Activity or High Specific Activity cobalt-60.

Other reactor designs that are based on light water reactors that use a cadmium type control rod, so we are --

THE PRESIDENT: And you cannot change. Is that --

MR. RENCHECK: It's very difficult. You're looking for different type of reactivity control with rich uranium versus natural uranium. We have different control systems as well that allow us to control zones much more finitely than a light water reactor can, so it's just a different design.

Much more obtainable for cobalt-60.

Others are using coupons. They're putting in little coupons in and trying to irradiate them, but the production is not at the scale we can produce.

THE PRESIDENT: So I found the fact sheets here from the IIA really useful.

Are they posted anywhere, I mean, to your point that nobody talks about that?

MR. SCONGACK: Yeah, James Scongack, for the record.

So we've actually launched a joint web site with OPG and Nordion. It's called "Cleannuclearsafehospitals.com". It has all that information on there and talks about Canada's leading role.

THE PRESIDENT: Well, there's -- they're ready made. You can actually post them right now while --

MR. SCONGACK: We Canadianized them.

THE PRESIDENT: Yeah.

MR. RENCHECK: And the High Specific Activity cobalt-60 is actually used on a technology called a gamma knife for treating brain tumours. That was developed in a London hospital here in Ontario. It's used around the world.

THE PRESIDENT: Staff, is there anything on this on our web site in terms of dissemination of information?

MR. FRAPPIER: Gerry Frappier, for the record.

I'm not sure about these particular charts that you're talking about, but certainly we do have an awful lot on our -- on our web site with respect to cobalt-60 and various medical applications.

MEMBER VELSHI: So does the production of

cobalt-60 in any way constrain your normal electricity production?

MR. RENCHECK: No.

MEMBER VELSHI: And the production of the high energy cobalt, was there -- I guess there was a licence amendment required as a result of that? No?

MR. SAUNDERS: Frank Saunders.

It didn't require a licence amendment. It did require us to prove that it fit within our safety case, and we did submit that.

THE PRESIDENT: Okay. So you'll be happy to know that this brings to a closing the hearing of today, and we will resume tomorrow morning at 8:30.

Thank you for participating, and have a nice evening.

--- Whereupon the hearing adjourned at 9:53 p.m.,
to resume on Tuesday, May 29, 2018 at 8:30 a.m. /
L'audience est ajournée à 21 h 53 pour reprendre
Le mardi 29 mai 2018 à 8 h 30