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Safety Commission

Commission canadienne de
sûreté nucléaire

Public meeting

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Ottawa, Ontario

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280, rue Slater
Ottawa (Ontario)

via videoconference

par vidéoconférence

Commission Members present

Commissaires présents

Ms. Rumina Velshi
Dr. Sandor Demeter
Dr. Timothy Berube
Dr. Marcel Lacroix
Dr. Stephen McKinnon

M^{me} Rumina Velshi
D^r Sandor Demeter
M. Timothy Berube
M. Marcel Lacroix
M. Stephen McKinnon

Secretary:

Secrétaire:

Mr. Marc Leblanc

M^e Marc Leblanc

Senior General Counsel:

Avocate-générale principale :

Ms. Lisa Thiele

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Ottawa, Ontario / Ottawa (Ontario)

--- Upon resuming on Wednesday, December 9,
2020 at 9:00 a.m. / L'audience reprend le
mercredi 9 décembre 2020 à 9 h 00

Opening Remarks

THE PRESIDENT: Good morning, everyone,
and welcome to the continuation of the meeting of the
Canadian Nuclear Safety Commission.

Mon nom est Rumina Velshi. Je suis la
présidente de la Commission canadienne de sûreté nucléaire.

I would like to begin by recognizing that
our participants today are located in many different parts
of the country. I will pause for a few seconds in silence
so that each of us can acknowledge the Treaty and/or
traditional territory for our locations. Please take this
time to provide your gratitude and acknowledgment for the
land.

--- Pause

LA PRÉSIDENTE : Je vous souhaite la
bienvenue, and welcome to all those joining us via Zoom or
webcast.

I would like to introduce the Members of
the Commission that are with us today, remotely: Dr.

Sandor Demeter, Dr. Stephen McKinnon, Dr. Marcel Lacroix and Dr. Timothy Berube.

Ms. Lisa Thiele, Senior General Counsel to the Commission, and Marc Leblanc, Commission Secretary, are also joining us remotely.

I will now turn the floor to Mr. Leblanc for a few opening remarks.

Marc...?

M. LEBLANC : Merci, Madame la Présidente. Bonjour, Mesdames et Messieurs.

For this Commission meeting, we have simultaneous interpretation. Please keep the pace of your speech relatively slow so that the interpreters are able to keep up.

To make the transcripts as complete and clear as possible, please identify yourself each time before you speak.

The transcripts should be available on the CNSC website within one to two weeks.

I would also like to note that this proceeding is being video webcast live and that archives of these proceedings will be available on our website for a three-month period after the close of the proceedings.

As a courtesy to others, please mute yourself if you are not presenting or answering a question.

The President will be coordinating the questions. During the question period, if you wish to provide an answer or add a comment, please use the Raised Hand function.

Madame Velshi, présidente et première dirigeante de la CCSN, va présider la réunion publique d'aujourd'hui.

President Velshi...?

THE PRESIDENT: Thank you.

The first item on the agenda for today is the Status Report on Power Reactors, as outlined in CMD 20-M41.

I note that we have representatives from the nuclear power industry and CNSC staff joining us for this item. They can identify themselves later, before speaking.

Dr. Viktorov, the floor is yours.

--- Technical difficulties / Problèmes techniques

MR. LEBLANC: So, Dr. Viktorov, your bandwidth is really not right. Maybe just try with the audio and remove the video, because you are too choppy. We cannot follow.

DR. VIKTOROV: Allow me to restart. I apologize.

--- Pause

MR. LEBLANC: Please go ahead, Dr.

Viktorov.

CMD 20-M41

Oral presentation by CNSC staff

DR. VIKTOROV: Once again, it is Alex Viktorov, the Director General for Power Reactor Regulation Directorate.

The Status Report on Power Reactors, CMD 20-M41...

--- Technical difficulties / Problèmes techniques

DR. VIKTOROV: For Pickering... and Unit 8 are now operating at full power.

--- Technical difficulties / Problèmes techniques

DR. VIKTOROV: CNSC staff resumed on-site... by New Brunswick Public Health... remains in the orange category.

--- Technical difficulties / Problèmes techniques

DR. VIKTOROV: ...for Darlington.

MR. LEBLANC: So, Dr. Viktorov, it is very, very -- still -- I don't know if you have somebody else who can pick up at this juncture and replace you.

DR. VIKTOROV: Yes. Luc Sigouin will take over while I attempt to finish my connection.

MR. LEBLANC: Thank you very much.

MR. SIGOUIN: It is Luc Sigouin here, for the record. I'm sorry, I don't have the Speaker Notes in front of me. I am trying to open them up. I don't know if there is someone else from the DPRR team who has them available right now.

--- Pause

MS. KARKOUR: Okay. Thank you. I will attempt to take over Alex's part here.

Thank you. Good morning, Madam President and Members of the Commission. My name is Suzanne Karkour on behalf of Alex Viktorov, the Director General of the Directorate of Power Reactor Regulation.

With me today are other regulatory and technical managers and specialists.

The Status Report on Power Reactors, CMD 20-M41, was finalized on December the 2nd. The following are updates reflecting changes since that date.

For Bruce Power, there are no new updates.

For Darlington, there are no new updates.

For Pickering, Pickering Unit 1 and Pickering Unit 8 are now operating at full power.

For Point Lepreau, CNSC staff resumed onsite inspections the week of November 30th, with the extra safety precautions required by New Brunswick Public

Health as the Saint John area remains in orange category.

I would also like to provide an update on the KI Pill Working Group.

The Working Group achieved concurrence on December 8th of the Draft Phase 1 Report. The Report is now undergoing translation and we expect the public review phase to begin in early February 2021.

This concludes the Status Report on Power Reactors. We are available to answer any questions you might have. Thank you.

THE PRESIDENT: Thank you, Ms. Karkour.

I will open the floor for questions from Commission Members and we will start with Dr. Demeter.

MEMBER DEMETER: Thank you. I have no questions.

THE PRESIDENT: Dr. McKinnon...?

MEMBER MCKINNON: Yes, thank you. This is a question really due to my ignorance of how fuelling machines work. It is in connection with Pickering Unit 1 which was derated down to 88 percent. It was mentioned the fuelling machines are unavailable due to planned outage.

Could you please explain that? Is that something that would be fixed by eventual refurbishment? Is that part of the design? Could you just explain that, please?

THE PRESIDENT: Maybe we can ask OPG to respond to that.

MR. FRANKE: Yes. Good morning. This is Jon Franke, the Senior Vice President for Pickering Nuclear Station.

Yes, the fuelling machines require periodic maintenance. We have both planned and unplanned maintenance activities that do prevent refuelling the reactors. In this case we had some planned maintenance to perform to ensure the reliability of the equipment. That maintenance has been completed and the reactor has been refuelled and is now back, as reported, operating at 100 percent power.

MEMBER MCKINNON: Okay. So it was maintenance of the actual fuelling machine itself, not the reactor?

MR. FRANKE: That is correct. That is correct, Mr. McKinnon.

MEMBER MCKINNON: Okay. Thank you very much. Thank you.

THE PRESIDENT: Dr. Lacroix...?

MEMBER LACROIX: Yes, thank you.

I do have a question concerning the written report. It says that CNSC is a member of the Nuclear Energy Agency Working Group on Inspection

Practices. And I was wondering, how is CNSC benchmarked in the world with respect to inspection practices and what are the strengths and the weaknesses of its inspection practices?

THE PRESIDENT: Thank you.

CNSC staff...?

MS. KARKOUR: Suzanne Karkour, for the record.

Yes, the CNSC is an active participant of the Working Group on Inspection Practices and the Working Group since the onset of the pandemic have initiated work to share best practices on how regulatory bodies would continue to provide the regulatory oversight effectively in light of the limitations that are imposed upon us. So at this time the Working Group has met several times to share their experiences and there will be a report that will be produced within the next few months. There is a meeting planned, I believe in Q3, which will be followed by an official report documenting these best practices and the commendable practices that all the regulators will share.

Thank you.

THE PRESIDENT: Mr. Jammal, you have something to add?

MR. JAMMAL: Madam President, it is Ramzi Jammal, for the record.

Just to complement Ms. Karkour's answer.

Even though there is a workshop for the inspection, our ongoing benchmarking internationally is taking place, from our President being the Chair of the Commission of Safety Standards. So there is a special discussion on the impact on regulatory oversight with respect to the COVID issue. And in addition to it, she directed the IAEA to start to look at a gap analysis in safety standards, not just for inspections, I am going to put it all global, to determine if there is any need for amendment.

Having said that, though, at my level, bilateral discussions, we are always measuring and it is not a race, but we were the first, if not the only regulator so far, that has re-entered the site safely based on the public health instructions and what our licensees have put in place. So, as a matter of fact, when we look at best practices, our inspectors, their feedback to me always said that they were safer within the fences of the nuclear power plant than going grocery shopping or being in the community.

THE PRESIDENT: Thank you, Mr. Jammal.
Dr. Berube...?

MEMBER BERUBE: I have no questions on this.

THE PRESIDENT: Okay. Thank you very much for the status report and, Dr. Viktorov, hopefully your Internet service is better as we move to our next agenda item, which is on the regulatory --

MR. LEBLANC: President Velshi, if I may, we will need five minutes just to get a few more people promoted. We had some issues with a few of them, so if we can just take five minutes so that we can bring them in and ensure we have every participant with us.

THE PRESIDENT: We will resume at 9:20 then.

MR. LEBLANC: Thank you very much.

THE PRESIDENT: Thank you.

--- Upon recessing at 9:13 a.m. /

Suspension à 9 h 13

--- Upon resuming at 9:19 a.m. /

Reprise à 9 h 19

THE PRESIDENT: Okay, we are good to resume then.

We will move to our next item on the agenda, which is the Regulatory Oversight Report for Canadian Nuclear Power Generating Sites: 2019.

The public was invited to comment in

writing. The Commission received seven submissions. We will get back to the submissions after CNSC staff's presentation.

Before turning the floor to CNSC staff for the presentation, I would like to acknowledge that representatives from the following departments are joining us and will be available for questions:

Environment and Climate Change Canada;
Department of Fisheries and Oceans;
Office of the Fire Marshal and Emergency Management;
New Brunswick Emergency Measures Organization.

I will turn the floor to CNSC staff for Part 1 of their presentation on the Regulatory Oversight Report.

Part 2 of the presentation, on the Darlington Refurbishment Update, will be later on today.

Dr. Viktorov, over to you.

CMD 20-M24/20-M24.A/20-M24.B

Oral presentation by CNSC staff

DR. VIKTOROV: Good morning. President Velshi and Members of the Commission.

For the record, my name is Alex Viktorov and I am the Director General of the Directorate of Power Reactor Regulation.

I apologize for the earlier technical glitch.

Today, I have the pleasure to introduce for information CMD 20-M24, the 2019 edition of the Regulatory Oversight Report for Canadian Nuclear Power Generating Sites.

The report, hereafter referred to as ROR, summarizes the regulatory oversight and safety performance of Canadian nuclear power plants, or NPPs, and the waste management facilities, or WMFs, located on the same sites as the NPPs.

We will also present some of the key topics covered in the supplemental CMD 20-M24.B, which was submitted by staff in part to provide brief responses to the key interventions on the ROR.

The ROR will be presented by staff from the Directorates of Power Reactor Regulation and Nuclear Cycle and Facilities Regulation. They are assisted by staff from other Directorates.

In addition, licensee representatives are also present and participate in the meeting.

Following an introduction, today's

presentation will provide general observations that are applicable to more than one facility covered in the ROR.

Then the presentation will continue with details regarding the safety performance of individual NPPs and WMFs.

We will then briefly highlight certain aspects of CNSC staff's response to the COVID-19 pandemic in terms of regulatory oversight of NPPs and WMFs and conclude with closing remarks.

Our Regulatory Oversight Report is one of a series of RORs being presented to the Commission that summarize CNSC staff's assessment of the safety of regulated facilities and activities in 2019.

While this presentation provides important conclusions and highlights from the ROR, it is not intended to be comprehensive of all findings and conclusions described in the report itself.

The presentation also includes a few updates on developments of particular interest that happened since the public posting of the ROR.

I will now pass the presentation to Ms. Suzanne Karkour.

MME KARKOUR : Bonjour, Madame la Présidente et membres de la Commission.

Mon nom est Suzanne Karkour. Je suis

directrice intérimaire de la Division de l'autorisation et de la conformité intégrée des centrales nucléaires.

This introduction provides some background information that is relevant to the 2019 ROR as well as some context for the general and facility-specific highlights that follow in the rest of the presentation.

To begin, I will note that the ROR CMD was intended to primarily cover 2019 and had limited information from 2020. This presentation contains some additional information related to 2020 that was not in the CMD.

There are four operating nuclear power plants in Canada.

These include three multi-unit plants in Ontario and one single unit plant in New Brunswick.

There is also a nuclear power plant in Quebec at Gentilly-2, which consists of a single reactor that is proceeding towards decommissioning.

The four operating NPPs have licences for a total of 21 reactors. Eighteen of these reactors were operating during most of 2019.

It is important to mention that Darlington Unit 2 was shut down in October 2016 as it is the first unit at Darlington to be refurbished. Unit 2 was undergoing refurbishment in 2019 but has since returned to

service in June 2020, and Unit 3 is now undergoing refurbishment. The Darlington site also hosts the Darlington Waste Management Facility.

Additionally, Units 2 and 3 at Pickering have been defuelled since 2008 and continued to be in safe storage state. The Pickering site also hosts the Pickering Waste Management Facility.

The Bruce site is home to both Bruce A and B Nuclear Generating Stations and the Western Waste Management Facility. Although Bruce A and B Units were in service in 2019 as shown in the slide, Bruce B Unit 6 was shut down in January 2020 to begin its refurbishment project.

For waste management, the Darlington, Pickering, and Western WMFs are licensed separately from the NPPs at their sites.

There are also WMFs at the Point Lepreau and Gentilly-2 sites. These are regulated under the same licence as their neighbouring NPPs.

Indigenous engagement and consultation with Indigenous communities with an interest in NPPs and WMFs continues to be a priority for the CNSC.

In 2019, CNSC staff continued to work with Indigenous communities and organizations to identify opportunities for formalized and regular engagement

throughout the lifecycle of these facilities, including meetings and facilitated workshops aiming to discuss and address all topics of interest and concern to interested Indigenous communities.

In addition, CNSC staff provided interested communities with notice of the opportunity for funding through the CNSC's Participant Funding Program to review and comment on this report and the opportunity to submit a written intervention and/or appear before the Commission as part of the Commission meeting.

I would also note that some of the text in the ROR was drafted with input from Indigenous groups.

The CNSC's compliance verification program uses a risk-informed and performance-based approach to verify that each facility maintains compliance with all regulatory requirements in the *Nuclear Safety and Control Act*, its Regulations, and the operating licences.

The CNSC assigns a significant amount of resources to this program, which generated the results that form the basis of the safety performance ratings presented in the 2019 ROR.

In 2019, CNSC staff conducted a wide variety of inspections and submitted the results to licensees in a total of approximately 100 inspection reports, which were listed for each site in their specific

sections of the report.

These inspections provided the majority of the approximately 1,600 findings that were used for the purposes of assessing the level of compliance for the 2019 ROR. The vast majority of the findings were either compliant, negligible or of low safety significance.

In addition to assessing compliance, CNSC staff also assessed performance through direct observations and reviews of various licensee submissions. For 2019, NPP licensees submitted 90 regular reports on a predetermined frequency and also reported to CNSC staff on 217 events. There was only one event at an NPP in the period from January 1, 2019 to June 1, 2020 that was presented to the Commission as an Event Initial Report. It was related to security. OPG also submitted eight reports to CNSC staff for reportable events at the WMFs. There were no Event Initial Reports related to WMFs presented to the Commission in 2019.

When the various activities, as listed on this slide, identified non-compliances with CNSC requirements, CNSC staff tracked all licensee corrective actions until closure and verified closure through follow-up activities.

CNSC staff's work to produce the Regulatory Oversight Report involves a significant amount

of effort to identify and sort both findings and performance information to the appropriate specific areas, which are the constituent parts of the CNSC safety and control areas, or SCAs.

CNSC staff identified which specific areas were relevant to each facility, rated those specific areas, then combined the ratings of the specific areas to provide a rating for each SCA for each facility.

The content of the ROR itself follows the structure of the specific areas and SCAs, similar to the 2018 ROR. However, in contrast to 2018, the 2019 ROR did not attempt to address all relevant specific areas for all facilities. Instead, the ROR provided highlights in terms of compliance and performance from selected specific areas in order to describe the most important issues and areas of strength, while providing examples of CNSC staff activities, licensee performance, corrective actions and improvements.

Finally, CNSC staff have introduced a new resource, a General Description of Regulatory Framework for Nuclear Power Generating Sites, which provides supporting information for the Regulatory Oversight Report that rarely changes. This helped to streamline the 2019 ROR, serving as a reference for readers who would benefit from more background information. CNSC staff have very recently

published this document on the CNSC website.

I will now pass the presentation to Mr. Marius Chirila to describe some of the general results in the ROR.

MR. CHIRILA: Good morning, President Velshi and Members of the Commission.

For the record, my name is Marius Chirila and I am a Regulatory Program Officer in the Power Reactor Licensing and Compliance Integration Division.

In the next part of the presentation, I will share some information and findings that are general in nature before other staff members describe some of the more specific results for each facility.

Typically, the results in this next section are applicable to more than one site and, in some cases, provide an opportunity to compare results between facilities.

As summarized on this slide, CNSC staff have made the following general observations with respect to the safety performance of NPPs and WMFs in 2019.

All events at NPPs and WMFs, reported per the respective requirements, were of low safety significance.

All licensees took appropriate actions to address the events in 2019.

The reactor trips and all transients at the NPPs were infrequent and were managed safely.

We will elaborate on these observations in subsequent slides.

The radiological releases to the environment from the NPPs and WMFS were low in 2019. They were well below the derived release limits that link allowed releases of specific radionuclides to the dose limit for the public. Further, in all but one case, these releases were also below the action levels that prompt licensee action well before a release approaches its respective derived release limit. The only exception was a monthly environmental action level that was exceeded at an NPP. These results demonstrated that the public and the environment in the vicinity of the NPPs and WMFs were protected in 2019.

The reported doses to workers at the NPPs and WMFs did not exceed the regulatory limits in 2019.

In the area of conventional health and safety, the frequency and severity of injuries and accidents involving workers were low. Lost time injuries were rare at NPPs and did not occur at all at the WMFs.

Finally, CNSC staff confirmed that the licensees met the detailed requirements for both nuclear security and safeguards. Based on the IAEA's comprehensive

evaluation of safeguards relevant information and an evaluation of the consistency of Canada's declared nuclear program with the results of the Agency's verification activities, the IAEA concluded that all nuclear material in Canada remained in peaceful activities, including the nuclear material at the NPPs and WMFs.

In 2019, CNSC staff monitored the NPP and WMF licensees to ensure that they actively engaged and communicated with Indigenous groups who have an interest in their facilities. CNSC staff confirmed that the licensees' dedicated Indigenous engagement programs continued to cover their operations at the NPPs and WMFs and were satisfied with the level and quality of Indigenous engagement conducted by the NPP and WMF licensees regarding their operations in 2019.

The ROR presents ratings of safety and control areas, or SCAs. These ratings are based on individual assessments of the specific areas that comprise the SCAs. All SCA ratings were rated as Satisfactory.

It is important to point out that although the pandemic did not impact the execution of oversight activities in 2019, the effort by CNSC staff to analyze the data and write the 2019 ROR began at the onset of the pandemic. The distinction between Satisfactory and Fully Satisfactory for each specific area in certain licensees is

a time-consuming process. This is something we sacrificed for the 2019 ROR in order to ensure that despite work restrictions and hurdles related to the pandemic, we would still be able to produce the ROR on time and to a reasonable level of quality. The fact that no Fully Satisfactory ratings were awarded in 2019 does not reflect in itself a decline in safety performance in 2019.

During 2019, CNSC staff observed that the NPPs and WMF licensees followed the approved procedures and took appropriate corrective actions for all events reported to the CNSC. When non-compliances or performance issues were identified during compliance verification activities, the licensees took appropriate corrective actions to effectively address them.

The NPP and the licensees also introduced various new safety measures including those linked to the implementation of new CNSC REGDOCs. For example, all licensees committed to conduct all future periodic safety culture assessments in accordance to the recently published REGDOC on safety culture.

CNSC staff continue to track implementation plans for REGDOCs related to fitness for duty, specifically those related to managing worker fatigue and managing alcohol and drug use. In late 2019, all licensees impacted by the REGDOC on managing alcohol and

drug use, with the exception of Hydro-Québec, requested amendments to the REGDOCs to allow them to incorporate more fluid testing for tetrahydrocannabinol or THC as part of revised implementation plans. CNSC staff have completed the review of their request, proceeded to amend the REGDOC, and presented the revised version for Commission approval in November of 2020.

Licensees continue to implement REGDOCs on deterministic safety analysis and probabilistic safety assessments for NPPs. The implementation of these two REGDOCs are long term and involve multiple steps. OPG and Bruce Power's implementation of the REGDOC for probabilistic safety assessment was supported by submission to address the new measures.

Point Lepreau is already compliant with REGDOC as of 2016.

All licensees are expected to be in compliance with these two REGDOCs by the end of this year.

That concludes the second part of the presentation. I will now turn the third part of the presentation over to the regulatory program directors for each of the facilities covered in the ROR, who will present highlights of the detailed CNSC staff assessment for each of those facilities. The five NPPs will be presented first, followed by the three WMFs.

I will now pass the presentation to Mr. John Burta for a brief presentation of the Darlington Nuclear Generation Station.

MR. BURTA: Good morning, President Velshi and Members of the Commission. For the record, my name is John Burta and I'm the director of the Darlington Regulatory Program Division.

In the next few slides, I will present highlights specific to the regulatory oversight of the Darlington Nuclear Generating Station.

In December 2015, the Commission renewed OPG's nuclear power reactor operating licence for Darlington for a period of 10 years. With the current licence, the Commission authorized OPG to undertake the refurbishment of all four Darlington units.

OPG began its refurbishment project in the fall of 2016, commencing with Unit 2, while the other units continued to operate. By the end of 2019, OPG was nearing completion of the installation stage for Unit 2, and in June 2020, Unit 2 resumed commercial operation.

In September 2020, Unit 3 entered its refurbishment outage. In July 2019, the Commission approved OPG's request to revise the Darlington integrated implementation plan, or IIP, for eight items as described in CMD 19-H104.

The *Licence Condition Handbook* for the Darlington operating licence was revised once in December 2019.

In 2019, CNSC staff conducted regulatory oversight on the completion of IIP items. This slide shows OPG's progress to completing IIP actions as well as CNSC staff's progress in reviewing OPG submissions. The graph shows overall cumulative progress and the status as of December 31st, 2019. There are a total of 625 IIP actions planned by OPG for Darlington. CNSC staff are satisfied with the progress made by OPG on IIP actions in 2019 and will continue to monitor progress on the remaining items.

A major aspect of the 2019 oversight activities conducted at Darlington concentrated on the refurbishment project. As part of this oversight, staff focused on the completion of refurbishment-related IIP items. CNSC staff also confirmed that all requirements were met for the safe return to service of Unit 2.

On November 5th, 2019, upon confirmation that all prerequisites were met, consent to load fuel in Unit 2 was granted by the executive vice-president chief regulatory operations officer of the CNSC. As reported in the ROR, CNSC staff are satisfied with the progress to date with the refurbishment project and with the implementation of the IIP. CNSC staff will continue to dedicate

significant staff resources to the regulatory oversight of the refurbishment project, including ongoing surveillance, inspections, and assessments of refurbishment activities. A more focused update on the status of the Darlington refurbishment project will be provided in a separate presentation following the ROR.

While CNSC staff assigned Satisfactory ratings for all SCAs at the Darlington Nuclear Generating Stations in 2019, staff did identify various examples where regulatory requirements were exceeded. Notable examples were found on the specific areas of chemistry control and maintenance.

CNSC also confirmed significant work by OPG to implement tools intended to improve monitoring and control of worker radiation doses with the aim of keeping them as low as reasonably achievable. I will discuss the radiation protection program further in the next slide.

As discussed in the 2018 ROR, CNSC staff had identified a downward trend in OPG's radiological hazard control. As an update, CNSC staff concluded that OPG had implemented measures to reverse this trend and that performance in the area of radiological hazard control has improved.

In 2019, CNSC staff closed two separate regulatory requests which were made in 2018. Overall, CNSC

staff are satisfied with the OPG performance in terms of radiation protection and will continue to closely monitor the RP program.

This concludes the highlights for Darlington. I will now pass the presentation to Kim Campbell for a presentation on the Pickering Nuclear Generating Station.

MS. CAMPBELL: Good morning, President Velshi and Members of the Commission. For the record, my name is Kim Campbell. I am the acting director of the Pickering Regulatory Program Division.

In the next few slides, I will present highlights specific to the regulatory oversight of the Pickering Nuclear Generating Station.

In 2018, the Commission renewed OPG's nuclear power reactor operating licence for Pickering for a period of 10 years.

Six of the eight units were operational in 2019, while Units 2 and 3 remained in a safe storage state.

OPG continues to address issues identified through the periodic safety review conducted in support of the 2018 licence renewal through its IIP. OPG continues to manage the completion of the IIP with all actions to be completed by December 31st, 2020.

The *Licence Condition Handbook* for

Pickering operating licence was revised once in 2019.

This slide provides a status update on the Pickering IIP commitments as of December 31st, 2019. The planned IIP commitments by OPG are shown in dark blue on this chart. Overall, there were 98 IIP commitments planned by OPG, and in 2019 OPG planned to complete a total of 28. The progress made by OPG in completing these are shown in dark yellow. Overall, OPG has completed 78 commitments which represents 80 per cent of the IIP as of December 31st, 2019. As seen on this slide, in 2019 OPG completed 36 commitments, compared to the 28 that were planned.

CNSC staff review status is also noted on this chart. In the lighter colour on the chart, light blue representing "Under CNSC review," and light yellow, "Closed by CNSC staff." From the 36 IIP commitments completed by OPG in 2019, 28 are still under review and eight have been closed.

I would now like to give an update on the progress in 2020. In 2020, there were only 20 IIP commitments remaining. Out of these 20, OPG has completed 12 and four are on schedule to be completed by the end of December 31st, 2020.

For the remaining four, in October 2020 OPG requested Commission approval to modify the IIP and change the completion date of four of these IIP commitments

to 2021. This will be presented to the Commission in a hearing in writing with public written interventions in January 2021. The notification of hearing was posted on the CNSC website on November 27th, 2020. Staff is satisfied with OPG's progress on the IIP.

In 2019, the total biomass of fish impinged at Pickering Nuclear Generating Station was approximately 15,000 kg. The 2019 total was higher than the prior five years and almost three times higher than the 2018 total of approximately 5,600 kg. None of the fish observed in 2019 were species identified as being at risk according to the federal *Species at Risk Act*.

To facilitate the assessment of OPG's compliance with its *Fisheries Act* Authorization or FAA, Fisheries and Oceans Canada is working with OPG to convert the biomass of fish impinged to Age-1 equivalent biomass, the unit of measurement cited in the authorization. If the Age-1 equivalent biomass is confirmed to exceed the FAA threshold, Fisheries and Oceans Canada will require additional offsetting to account for the losses.

Fisheries and Oceans Canada is working with OPG to amend the FAA for Pickering, and they're also here today for the Commission's questions.

In the meantime, OPG initiated the investigation of several mitigation measures and these are

shown on this slide.

By 2019, CNSC staff completed the reviews of the full-scope probabilistic safety assessment update for Units 5 to 8. Note that the update for Pickering Units 1 and 4 had been submitted and reviewed prior to that. Both updates were found to comply with the applicable CNSC regulatory document for PSA, that is S-294. Meanwhile, OPG also progressed towards implementation of the enhanced measures stipulated in REGDOC-2.4.2, anticipated for the end of this year.

CNSC staff also note strengths in OPG's level of compliance and performance in the area of convention health and safety. CNSC staff typically identify numerous findings in this SCA during the course of the year, and noted many compliant findings in 2019 in areas such as worker practices and awareness, adherence to applicable labour codes, housekeeping, and the use of personal protective equipment.

CNSC staff continue to closely monitor the aging management of critical components at Pickering in 2019, including confirmation and assurance of the ongoing fitness for service of pressure tubes. As noted here, all pressure tubes remained well within the operational limit previously set by the Commission.

Finally, OPG continued to show improved

performance for the maintenance at Pickering in 2019 by continuing reduction in the indicators related to maintenance deferrals and backlogs.

That concludes the highlights for Pickering. I will now pass the presentation to Mr. Luc Sigouin for the brief presentation on the Bruce Nuclear Generating Station.

M. SIGOUIN : Bonjour, Madame Velshi et membres de la Commission. Mon nom est Luc Sigouin, and I am the Director of the Bruce Regulatory Program Division.

In the next few slides, I'll present highlights specific to the regulatory oversight of Bruce A and B. Bruce A, Units 1 to 4, and Bruce B, Units 5 to 8, were all operational during 2019. All reactor units operated for the conditions prescribed in the licence and within the power limits identified in the *Licence Conditions Handbook*. The nuclear generating stations at Bruce A and B are governed by a single power reactor operating licence, which was renewed by the Commission in 2018 for a period of 10 years.

The licence scope includes refurbishment or major component replacements, MCR, which started with Unit 6 in January 2020. The major component replacement project prerequisite activities for Unit 6 began in January 2019, one year prior to the start of the project, with

inspections and reviews of the contractor management and supply chain processes. Three MCR Type II inspections and two MCR desktop inspections were performed in 2019. No major issues have been identified at this stage by CNSC staff.

Oversight of MCR execution started in January 2020 once the outage of Unit 6 began. In 2019, CNSC staff monitored MCR preparations and initial IIP progress at Bruce A and B on a regular basis.

Staff note that one revision was made to the Bruce A and B *Licence Conditions Handbook*, effective April 1st, 2019, to add references to new regulatory documents.

This slide shows the progress being made by Bruce Power in completing the IIP for Bruce A and B as well as CNSC staff progress in reviewing Bruce Power's submissions. The graph shows overall cumulative progress and the status as of December 31st, 2019. There are a total of 191 IIP actions planned by Bruce Power, and 10 of them were planned for completion in 2019. The dark blue bars show that 18 actions were completed by Bruce Power in 2019. The yellow bars show four actions being reviewed by CNSC staff, and the light blue bars show that 14 were closed by CNSC staff in 2019.

CNSC staff review the completed IIP

actions through a combination of desktop reviews and on-site observation. CNSC staff confirmed acceptable IIP completion progress in 2019.

Bruce Power continued to improve the safety analysis for the station. In 2019, CNSC staff completed the review of Bruce Power's threshold break-size assessment in support of the composite analytical approach for the safety analysis of large-break loss-of-coolant accidents. CNSC staff found that there was sufficient justification to accept the predicted low frequency for break size larger than the threshold break size, which is a critical premise in the assessment.

Bruce Power demonstrated that the integrity of the steam generator tubes and support structures was adequate in 2019. CNSC staff confirmed that no active degradation mechanisms would challenge integrity of the steam generator and preheater tubes over the operating periods requested by Bruce Power.

In 2019, CNSC staff were satisfied with the performance of Bruce Power's programs related to the reliability of special safety systems. All special safety systems at Bruce A met their targets for unavailability in 2019. For Bruce B, all special safety systems met their targets for unavailability in 2019 except for the emergency cooling injection system for Units 5 through 8. There was

no significant impact on nuclear safety as a result of these periods of unavailability. CNSC staff confirmed that the corrective actions taken by Bruce Power to address this issue were effective.

In 2019, CNSC staff noted that the preventive maintenance completion ratios were improved to approximately 90 per cent for Bruce A and Bruce B. For Bruce A, Bruce Power reduced the corrective critical maintenance backlogs and reached the range of industry best practices. For Bruce B, Bruce Power continued to reduce its corrective maintenance backlog and also reduced the deficient critical maintenance backlog in 2019.

Bruce Power conducted the Huron Resilience corporate emergency exercise in 2019. It lasted three days and involved municipal, provincial, and federal agencies. CNSC staff inspected the exercise and concluded that Bruce Power demonstrated the ability to adequately respond to an emergency while ensuring the safety and protection of on-site personnel, the public, and the environment.

CNSC staff confirmed that Bruce Power's environmental protection program met the regulatory requirements and that the environment was adequately protected at Bruce A and B in 2019.

In 2019, radiological releases to the environment from Bruce A and B were well below regulatory

limits.

Bruce Power has a dedicated Indigenous engagement program. In May 2019, a terms of reference was signed between the Saugeen Ojibway Nation, or SON, and the CNSC. The purpose of the terms of reference is to strengthen the relationship between SON and CNSC and meaningfully involve SON in CNSC's regulatory activities in the SON territory.

CNSC staff confirm that Bruce Power had adequate programs in place to confirm that pressure tubes are fit for operation. CNSC staff are actively monitoring the fitness for service of shield channels at Bruce A and B to verify that pressure tube fracture toughness will be sufficient for safe operation before the tubes reach the licensing limit of 300,000 effective full-power hours of operation at hydrogen concentration limit exceedances.

This concludes the highlights for Bruce A and B. I'll now turn the presentation over to Ms. Heather Davis to summarize the results for the Point Lepreau Nuclear Generating Station and the Gentilly-2 facility.

MS. DAVIS: Good morning, President Velshi and Members of the Commission. For the record, my name is Heather Davis, and I am the power reactor site office supervisor with the Point Lepreau Regulatory Program Division.

In the next few slides, I will present highlights specific to the regulatory oversight of Point Lepreau.

The current power reactor operating licence for Point Lepreau is valid until 2022. Its five-year period provides adequate time for NB Power to complete a PSR in support of its next licence renewal in accordance with CNSC regulatory document REGDOC-2.3.3 Periodic Safety Reviews.

In December 2018 CNSC staff accepted the Point Lepreau PSR basis document in support of a proposed ten-year licensing period, from 2022 to 2032. NB Power submitted all the Safety Factor Reports by March 2019, and CNSC staff sent their review comments on all NB Power's safety factor reports by October of 2019.

On September 1st of 2020, CNSC staff completed the review of the Global Assessment Report. That was submitted by NB Power in February 2020. NB Power has since submitted the Integrated Implementation Plan which is now under review by CNSC staff.

CNSC staff completed a major revision of the Point Lepreau *Licence Condition Handbook* in 2019. Some details are provided in the next slide.

CNSC staff completed a major revision of the Point Lepreau LCH in 2019. The 2019 revision of the

LCH involved several major changes which staff confirmed were within the licensing basis for Point Lepreau.

The changes of minimum shift complement involved adjustments to the number of mechanical maintainers and electrical instrumentation and control maintainers, and the addition of an emergency response team required numbers.

CNSC staff expanded certain exemptions related to pressure boundary registration of fittings in fire protection systems based on equivalent or more stringent requirements associated with the certification process, associated with Underwriters Laboratories of Canada.

CNSC staff allowed a change to the frequency of the reactive building leak rate test from three to four years.

Finally, CNSC staff reflected its acceptance of NB Power's update of its derived release limits for Point Lepreau.

CNSC staff confirmed that NB Power appropriately met the scope of its planned outage for 2019, effectively planning and executing the work at Point Lepreau. CNSC staff identified 18 compliant findings during its planned outage inspection. CNSC staff noted that there were no process or equipment failures during the

outage and that NB Power met all of the regulatory undertakings and commitments for the outage.

NB Power maintained both the critical, corrective maintenance backlog and the number of preventive -- Critical Preventive maintenance deferrals low in 2019.

The power reactor operating licence for Point Lepreau requires NB Power to submit a quarterly report on the solid radioactive waste management facility. CNSC staff were satisfied with all reports and additional information submitted by NB Power for the solid radioactive waste management facility in 2019.

I will now pass the presentation to Mr. Bruneau Romanelli for an update on G2.

M. ROMANELLI : Bonjour, Madame Velshi, ainsi que les membres de la Commission.

Mon nom est Bruno Romanelli et je suis Agent du Programme de réglementation affecté à Gentilly-2.

Je vais maintenant enchaîner avec la présentation pour les Installations de Gentilly-2.

En 2019, Hydro-Québec a poursuivi les activités de déclassement sans problème. Hydro-Québec jusqu'à présent respecte le plan et les échéanciers qui avaient été fournis à la Commission lors de l'octroi de son permis de déclassement d'un réacteur de puissance en 2016.

La campagne de transfert du combustible irradié a été réalisée avec succès en 2019. L'année 2020 devrait voir l'achèvement des transferts de combustible irradié vers les modules de stockage à sec.

Le transfert de l'eau lourde de Gentilly-2 hors du site s'est poursuivi en 2019. Ce projet devrait également se terminer pendant l'année 2020.

Une nouvelle révision du *Manuel des Conditions de Permis* a été publié en 2019 afin de refléter l'évolution du site vers l'état de stockage à sec sûr, un jalon qui est important et qui devrait être atteint vers la fin 2021.

En 2019, le personnel de la CCSN a poursuivi des inspections aux installations de Gentilly-2. Une inspection sur le transfert du combustible a été réalisée en mai 2019. Deux observations de non-conformité mineure ont été réalisées par le personnel de la CCSN et corrigées par Hydro-Québec.

Toujours en mai 2019, une inspection sur un exercice incendie d'entraide mutuelle entre le Service de Sécurité Industrielle de Bécancour et Hydro-Québec a été menée. Le personnel de la CCSN a conclu qu'Hydro-Québec était conforme aux exigences réglementaires. Hydro-Québec a implanté les correctifs requis pour les deux non-conformités mineures qui ont été identifiées.

En novembre 2019, trois inspections reliées au domaine de l'environnement ont été effectuées par le personnel de la CCSN. Le personnel de la CCSN a jugé la performance d'Hydro-Québec conforme aux exigences réglementaires. Deux cas de non-conformité ont été signalés, et Hydro-Québec a su apporter les correctifs et les améliorations nécessaires.

That concludes the presentation of highlights for the nuclear power plants. I will now pass the presentation to Ms. Nancy Greencorn to present highlights for the Waste Management Facilities.

Thank you.

MS. GREENCORN: Good morning, President Velshi and Members of the Commission.

For the record, my name is Nancy Greencorn, and I'm the acting director of the Wastes and Decommissioning Division. In the next few slides, I will present highlights specific to the regulatory oversight of the Darlington, Pickering and Western Waste Management Facilities in 2019.

As noted previously, there are also waste management facilities at the Point Lepreau and Gentilly-2 sites. These are regulated under the same licence as the neighbouring NPP.

The Darlington, Pickering and Western

Waste Management Facilities are operated by OPG under Waste Facility Operating Licences. The licence period for each of these facilities is ten years and they are presented on this slide.

During 2019 CNSC staff did not revise the Waste Management Facility Licence Condition Handbooks.

Through various compliance activities CNSC staff confirmed that OPG operated all three waste management facilities in accordance with the operational policies, principles, and safety requirements.

CNSC staff note that the maximum dose received by a worker in 2019 was 0.8 mSv at the Darlington Waste Management Facility, 0.9 mSv at the Pickering Waste Management Facility, and 1.8 mSv at the Western Waste Management Facility. These values are all below 5 percent of the regulatory limit for nuclear energy workers.

In addition, there were no reported lost-time injuries at any of the waste management facilities in 2019.

Furthermore, CNSC staff confirmed that all reported airborne and waterborne radiological releases from the waste management facilities in 2019 were below regulatory limits as well as environmental action levels.

As part of the 2019 regulatory oversight activities CNSC staff observed the execution of fire drills

at the three OPG waste management facilities. This was in response to a 2018 fire protection program finding. No non-compliances were noted by staff during the Western and the Pickering Waste Management fire drills. However, there was an accounting issue during the Darlington Waste Management Facility fire drill where one OPG staff member did not assemble outside at one of the two assembly areas. The worker exited the facility and was accounted for 30 minutes after the fire alarm had sounded. This resulted in CNSC staff issuing an action notice to OPG.

OPG provided immediate and long-term corrective actions to address the non-compliance. Specifically, the reinforcement of accounting training for all OPG Darlington Waste Management Facility staff.

CNSC staff were satisfied by the licensee's response.

During an inspection at the Western Waste Management Facility, CNSC staff identified a non-compliance related to legacy issues where the Low Level Waste and Intermediate Level Waste containers in storage did not comply with the labelling requirements of the *Radiation Protection Regulations*. As a result, staff issued a directive and OPG was required to submit a plan to achieve compliance for all remaining Low and Intermediate Level Waste containers.

In March 2020, OPG provided a multi-phase corrective action plan regarding this directive that would be completed by August of 2021. CNSC staff found this response to be acceptable.

CNSC staff confirmed satisfactory human performance during inspections conducted at the WMFs.

OPG staff worked in an organized and safe manner and training records were complete and met regulatory requirements for all tasks being undertaken.

In total, OPG reported eight events at OPGs three waste management facilities. Overall, CNSC staff were satisfied with OPG's actions to address the events themselves and the corrective measures taken to prevent reoccurrences.

That concludes the highlights for the waste management facilities and I will now return the presentation of Mr. Chirila.

MR. CHIRILA: Thank you. Marius Chirila, for the record.

In the next part of the presentation, I will summarize aspects of CNSC staff's response to the ongoing pandemic in the context of regulatory oversight of NPPs and WMFs.

I will then lead into the concluding remarks.

On March 15th, 2020 the CNSC activated the

Business Continuity Plan (BCP) in response to the COVID-19 pandemic. Effective March 16th, all CNSC staff in Ottawa and at regional and site offices were directed to work from home. CNSC staff immediately suspended all regular compliance activities and identified activities that were considered critical such as oversight of the Darlington Unit 2 refurbishment.

In response to the pandemic, CNSC staff developed several procedures to ensure continued regulatory oversight. These procedures are to be utilized during and following the COVID-19 pandemic until normal compliance processes resume. In general, they provide direction for the conduct of oversight activities, both remotely and on site, as well as direction on revising the regulatory oversight plan for the fiscal year

The procedures also provide a framework for conducting remote oversight activities. For NPPs, additional measures were placed on enhancing the number and capabilities of site inspectors to work remotely. CNSC staff have worked with licensees to provide comprehensive and remote access to licensee information systems, including actual plant data, corrective actions database, and participation in all key plant management meetings.

In addition to the new procedures, staff created pre-job briefs as additional instructions prior to

performing onsite activities. The provision of personal protective equipment forms part of -- forms part of this pre-job brief.

On May 5th, CNSC staff resumed onsite activities at the NPPs in a limited capacity. These activities focussed on general health and safety issues such as combustible material, housekeeping and contamination posting, as well as licensee adherence to the pandemic response plans and COVID-19 health protocols. Onsite inspections will also focus on understanding any incident-related concerns as well as critical activities related to the safe operation of the NPPs and refurbishment projects.

For WMFs, onsite inspections will still take place during the 2020-21 fiscal year. Inspection procedures and protocols have been revised to incorporate pandemic protocol. Cross-directorate support such as NPP site inspectors conducting field inspections with the support of subject-matter experts participating remotely are being utilized to minimize travel for CNSC staff.

In addition, CNSC staff confirmed that licensees took active steps to ensure continuity of operation during the COVID-19 outbreak. For example, OPG implemented measures such as ensuring that all non-essential personnel worked from home, restricting

access to facilities, and splitting stuff into two distinct crews working separate shifts.

This concludes the section on the response to the pandemic. I will now return the presentation to Ms. Karkour.

MS. KARKOUR: For the record, my name is Suzanne Karkour. I will now briefly describe the interventions received on the Regulatory Oversight Report during public consultation and the steps that we will -- that will be followed so that the ROR can be published and posted on the CNSC website.

A summary of the 2019 ROR was posted on the CNSC website with an invitation for comments on the report from the public and indigenous groups. The posting was announced on the CNSC website through social media and through the CNSC email distribution list. In total, four applications were received and awarded over \$20,000 to participate in this meeting through written interventions.

Additional information has been provided by CNSC staff in supplemental CMD-20-M24.B in response to certain comments received from the interveners.

The interventions covered a variety of topics and demonstrated the ongoing interests of numerous stakeholders in the operation and regulation of nuclear power plants and waste management facilities in Canada.

A few of the major topics or themes identified by CNSC staff are listed on this slide. These themes are addressed in CSNC staff's supplemental CMD.

This slide describes the steps CNSC staff will take after today's presentation of the 2019 ROR. The report itself will be revised based on comments provided during today's proceedings. There are some specific errors that will need to be corrected as identified in the supplemental CMD.

Each intervention will be assessed to determine if changes are required in the 2019 ROR, or if changes should be considered when writing the 2020 ROR.

A draft French translation of the 2019 ROR was recently completed. It will be reviewed and other editorial and formatting changes will be made before proceeding to publication.

Licensee non-compliances described in the 2019 ROR that were not resolved by the end of 2019 will be carried forward for documentation in the 2020 ROR.

The Commission requests for information as identified in supplemental CMD that are not considered to be closed by the presentation of the 2019 ROR will be carried forward for the 2020 ROR.

Finally, CNSC staff will continue to

monitor licensee safety performance at NPPs and WMFs and conduct rigorous compliance verification activities, documenting them in the 2020 ROR.

I will now pass the presentation to Dr. Viktorov for final conclusions.

DR. VIKTOROV: Alex Viktorov, for the record.

Based on the outcomes of a mature, comprehensive compliance oversight program, CNSC staff conclude that the facilities covered in this ROR operated safely in 2019. This conclusion was borne out by the data collected by staff, and assessments of information submitted by licensees.

During the year CNSC staff conducted numerous compliance verification activities in accordance with oversight plans. Certain outcomes of these activities prompted CNSC staff follow-up actions, and informed additional verifications for each facility. For any identified issues staff verified that corrective actions were implemented such that issues were resolved to staff's satisfaction. As is the case for any year, some issues were still being resolved once the ROR was finalized.

CNSC staff rated all fourteen Safety and Control Areas as satisfactory for all facilities, although we didn't rate safety analysis for Gentilly-2.

CNSC staff observed that radiological doses for both workers and the general public were well below regulatory limits. We also note that each licensee promoted a healthy safety culture and conducted its operations as the NPPs and WMFs with due regard for the safety of the facility, workers and the public.

The compliance verification program continues to evolve as CNSC implements improvements in the program itself, as licensees' operational conditions change and as the requirements on licensees evolve.

CNSC staff also take into account intervenor's comments when reviewing the program itself and the reporting of its results.

Notably, in early 2020, the compliance verification plan was adjusted in response to the pandemic to ensure ongoing, effective oversight of NPPs and WMFs.

This concludes the presentation. CNSC staff are available to answer any questions that the Commission may have.

Thank you.

THE PRESIDENT: Thank you, CNSC staff for the presentation.

I will now ask the representatives of each nuclear power plant licensee if they wish to make comments, and we'll follow the same order as the staff presentation.

So, I'll start with Ontario Power Generation first. Would you like to make a statement?

Ms. Tarle?

MS. TARLE: Yes, thank you.

Good morning, Madam President and Members of the Commission.

For the record, my name is Emily Tarle and I'm the vice-president of Station Engineering for Ontario Power Generation.

With me today are John Franke, senior vice-president of the Pickering Nuclear Generating Station, Val Bevacqua, director of operations and maintenance at the Darlington Nuclear Generating Station, and Lise Morton, vice-president of Nuclear Waste Management.

We are also joined by other members of OPG senior leadership team.

Thank you for this opportunity to discuss the 2019 Regulatory Oversight Report. Overall, OPG found it to be both fair and balanced. We appreciate the CNSC's assessment of our continued strong safety performance and we recognize the opportunities for improvement.

In addition to upholding nuclear safety, we remain focussed on ensuring fitness for service, maintaining an engaged workforce, sustaining low impacts of operation, supporting transparency and engagement with the

public and indigenous communities and investing in our facilities and our people.

Our company-wide safety performance was recently recognized with the Canadian Electricity Association's President's Award of Excellence for employee safety and generation, and we are currently on track to surpass last year's best ever performance.

The unwavering safety focus that is demonstrated by our employees and contactors on a daily basis is a testament to their nuclear professionalism, as well as to our responsibility as a company, to the Commission, our shareholders and the public.

We would like to take a moment to thank our staff for their ongoing dedication to safety, accountability and teamwork. In 2019, this resulted in a top-performing year at our Darlington and Pickering sites, both of which have been recognized by international peers for exemplary performance in safety, reliability and continuous improvement.

This dedication also enabled us to celebrate a major milestone in the operation of Unit 1 at Darlington. We are very proud to say that it now holds the world record for the longest continuous operation of any nuclear facility worldwide.

During this unprecedented and ongoing

COVID-19 pandemic, our employees have come together to develop innovative solutions to address the needs of not only our sites but also our communities. From deploying our existing thermography units to assist with temperature screening of staff, to producing hand sanitizer and collaborating on 3D printed face shields with community partners, our staff have donated over one million items of personal protective equipment, while continuing to work diligently to keep the lights on and support other essential workers and services and front-line workers through this challenging year.

Recently we completed a campaign to harvest the medical isotope Cobalt-60 at Pickering. The station provides 20 percent of the global supply of Cobalt-60, making it one of the world's leading sources of this critical isotope used to sterilize medical devices.

Following processing, the isotopes will provide yet one more line of defence against COVID-19 for use at hospitals and care facilities around the world.

I am pleased to report that Darlington Unit 2 was safely returned to service following its successful refurbishment and all the associated integrated implementation plan commitments have been met.

I am also pleased to report that work on Darlington Unit 3 refurbishment is now well underway, with

the most recent milestone being the successful defuelling of the reactor.

In our Nuclear Waste Management Division we continue to focus on stewardship initiatives, including prioritizing waste minimization and the safe sorting, transporting, processing and storing of radioactive waste, while protecting employees, the public and the environment.

During the pre-pandemic time period covered by this report, OPG liaised with indigenous communities, the public and our station communities in a variety of ways and through a number of platforms, including both social and print media and in-person events. As an example, close to 4,000 visitors attended our annual Open House in October 2019 to learn more about nuclear power, tour the Darlington site and mockup facility, and gain a better understanding of the role nuclear power and small modular reactors can play in helping to secure a low-carbon future in Ontario and across Canada.

In closing, I would like to state that each and every day at OPG we recommit to fostering a learning culture, with a focus on ensuring safety and operational excellence. As indicated in this report, our performance is strong and we are committed to seeking continuous improvement on our journey to excellence.

We thank you for providing us this

opportunity to once again appear before the Commission as we discuss the Regulatory Oversight Report and we look forward to answering any questions you may have.

THE PRESIDENT: Thank you, Ms. Tarle.

We will now turn over to New Brunswick Power and see if you have any comments or statement you would like to make.

MR. NOUWENS: Thank you, President Velshi, Members of the Panel, CNSC staff, observers and guests.

For the record, my name is Jason Nouwens and I am the Director of Regulatory Affairs and Performance Improvement at the Point Lepreau Nuclear Generating Station.

Joining me today are Joel Armstrong, our recently appointed Station Director, Kathleen Duguay, Manager of Community Affairs and Nuclear Regulatory Protocol, Andy Hayward, Director of Engineering and Chief Nuclear Engineer, and Nick Reicker, our Manager of Regulatory Affairs and Emergency Preparedness.

I will now turn it over to Joel Armstrong for our opening remarks.

MR. ARMSTRONG: Thank you, Jason.

For the record, my name is Joel Armstrong and I want to thank the CNSC for an objective and instructive annual report on the Point Lepreau Nuclear

Generating Station. The report is a very transparent way of rating station performance and is a useful tool for us to share with our public and communities.

We concur with the 2019 Regulatory Oversight Report findings and are pleased that the Point Lepreau Nuclear Generating Station continues to meet the regulator's expectations in all areas. These types of assessments become part of the station's continuous improvement process.

We would like to highlight that we continue to work closely with our provincial Emergency Measures Organization.

In 2019, we completed the demographic survey which is part of our continued efforts to have the most up-to-date information available as part of our overall response plan, which is posted on the Province of New Brunswick website.

We delivered our updated emergency guide to our surrounding communities and it is also posted on our website.

And we are happy to report that our new offsite Emergency Operations Centre located in St. George, New Brunswick, is now fully operational.

Work is also underway in preparation for our large-scale Synergy Challenge Exercise in the fall of

2021. As in the past, this will involve our First Nations and surrounding communities, industry experts and emergency responders at the provincial and federal levels. These types of exercises will continue to demonstrate our collaborative readiness to respond to any emergency, even in the unlikely scenario of a large-scale nuclear event.

With respect to conventional safety, we are very proud of our safety record and are committed to maintaining a safe work environment for all workers at Point Lepreau. Our conventional safety performance remains very strong.

With respect to radiation safety, radiological releases over the life of the plant are significantly less than the annual authorized regulatory limit for a single year. The total annual dose for 2019 is about 0.12 percent of the annual regulatory limit of 1000 μ Sv per year.

The total dose from the Point Lepreau Nuclear Generating Station over the entire operating period -- that is 1983 to present day -- is about 3 percent of the annual regulatory limit. These are especially noteworthy to us as our surroundings are unique, given the distinctive ecological features surrounding our station.

Our Environmental Management System is registered to the International Standards Organization ISO

14001 Environmental Management Systems, which we successfully recertified in 2019. This is a testament to our strength in our environmental protection programs.

NB Power has implemented several initiatives supporting indigenous knowledge and establishing more awareness and sensitivity among its workers. These initiatives have been extended to our local communities and members of the general public.

It is a privilege for us to be part of that local community because we not only work here, we live here and are dedicated to driving safety and operational excellence into everything we do. This is our continued commitment to our communities and we are honoured to have their level of engagement and support.

Over the past year we have all been impacted by COVID-19 and telecommunication tools thankfully allow us to host virtual discussions with our First Nations and surrounding communities. We also, when possible, participated in face-to-face discussions, practising physical distancing and wearing facial coverings, and we have used every method possible to remain in touch.

NB Power continues to modernize the station with the latest codes, standards and Regulations. We take note of the items identified for improvement by the CNSC and we have put corrective actions in place. Through

a carefully planned and executed program that involved everyone on our team across the station, we have achieved steady and continuous improvement together. We set higher and more challenging goals for ourselves and we have a well-established framework we call Navigating for Excellence which outlines our core values and our way of doing business, such as:

Safety. We commit to safety in everything we do.

Leadership. We empower our workforce and we lead by example.

Operation. We build a culture of prevention and maintain an operational focus.

Process. We work the plan and adhere to process.

Equipment reliability. We take charge, we own the plant.

And business acumen. We continue to seek value for money.

Navigating for Excellence represents the cornerstone of our commitment to being one of the best and safest nuclear plants in the world.

These significant achievements would not have been possible without the dedication, hard work and efforts of the nuclear professionals at Point Lepreau. I

want to thank each Point Lepreau employee for their efforts in achieving these strong safety and performance results for the people of New Brunswick.

Earlier this fall, despite the challenges of COVID-19, we successfully completed a planned maintenance outage. We took extra measures to ensure our usual safe and sound approach to protect workers and communities had an added layer of protection during the COVID-19 pandemic. Point Lepreau established a communication protocol with employees, contractors and community members, with emphasis on the prevention of the spread of COVID-19, both on-site and off-site.

We appreciate the time and effort that the intervenors took to participate and provide comments on the ROR. Their involvement continues to support our efforts towards meaningful and transparent dialogue with all members of the public. We review and consider each submission and compare the comments to our program to ensure we can address each question raised. This is part of our commitment to seek and understand.

We appreciate the work of the CNSC in preparing the report and we look forward to your future review of our efforts.

Thank you for your time and we would be pleased to discuss any aspect of our operation in more

detail.

THE PRESIDENT: Thank you, Mr. Armstrong and Mr. Nouwens.

We will now turn to Bruce Power for a statement.

MR. MUDRICK: Good morning, President Velshi and Commissioners. Thank you.

My name is Chris Mudrick, I am the Executive Vice President of Operations and Chief Nuclear Officer at Bruce Power.

Other members of the Bruce Power team here today are James Scongack, Executive Vice President of Corporate Affairs and Operational Services, Gary Newman, our Chief Engineer, and Maury Burton, our Chief Regulatory Officer.

I want to recognize that Bruce facility is on the traditional territories of the Saugeen Ojibway Nation and the Métis peoples.

Given that this is my first appearance before the Commission, I would like to take a moment to share a bit of my background.

I joined Bruce Power on April 6th of this year after spending 33 years with Exelon in the United States, holding increasingly senior roles in engineering and operations. Most recently, I was the Senior Vice

President of East Operations for Exelon Nuclear and the Chief Operating Officer of the CE&G entity, with six nuclear power plants under my watch, and I am excited to be the new member here at the Bruce team.

New to the Canadian process, I appreciate the Commission's open and inclusive approach to the annual review of reactor operations. This forum is one of many opportunities where communities around our site, indigenous groups, intervenors and all other interested parties can participate and better understand all aspects of our operations. That includes the areas where we are operationally strong and those where we continue to focus on as areas for improvement.

From my experience in the U.S. industry and my contacts across the global nuclear community, I see this annual review as a best practice in terms of regulatory transparency and engagement. In our industry, technical accuracy, continuous improvement, critical reviews and transparency all serve us better.

I will start with safety. We view nuclear safety as the foundation of our business, one that is built on four pillars: reactor safety, industrial safety, radiological safety and environmental safety. Let me briefly touch on each of these pillars and frame our performance in that light.

From a reactor safety perspective, we strive for operational excellence. To achieve it, we focus on human performance and equipment reliability.

In 2019 and through 2020, from an equipment reliability perspective we focused on maintenance backlog items where we felt we required additional resources to resolve. And thanks to those efforts, we are currently on track to reduce the priority backlog by 80 percent year-end and our overall backlog by approximately 50 percent.

The ongoing efforts by the Bruce employees here to improve our work management process have also helped increase our equipment reliability and we continue to focus these efforts in 2021.

Equipment reliability will always be an essential part of our operations. We are never satisfied with the status quo. We will continue to strive for top industry performance.

The second pillar is industrial safety. With all the work at the Bruce Power site, planning and preparation make the difference for execution. Being prepared and executing work safely is the key to our success in industrial safety. While nuclear compares quite favourably to other industries in terms of safety, we are not satisfied unless every worker, including contractors,

go home at the end of the day in the same condition they arrived. We continue to set high expectations for conventional safety on our site, in particular with an increase in contractor staff working on our life extension program.

Over this past year we have had the added responsibility for protecting our workers and in turn our communities from the spread of COVID-19. Faced with a global pandemic, Bruce Power has been a leader, not just in the nuclear industry but across all businesses, in supplying protective equipment, establishing safety protocols and ensuring Ontario's supply of power has remained safe, reliable and affordable throughout the pandemic. I will talk a little bit more about this later, but our highly successful multipronged COVID-19 response has been a true illustration of how we view worker and industrial safety. Given the increased volume of work underway at our facility, it remains top of mind.

The third pillar is radiological safety and we have continued to see a strong, sustained performance in this area. We focused on ALARA, as low as reasonably achievable, that principle to continue to drive down worker doses. Of note, we sustained industry-leading performance in personal contamination events thanks to efforts we put in place many years ago and as we move

forward we will continue to innovate with remote-operated tooling to minimize worker dose.

Finally, the fourth pillar of nuclear safety is environmental performance and this tends to be an area of great interest to our indigenous communities and other interested groups. At Bruce Power our goal for environmental performance is not just compliance but excellence and sustainability, so we look at every element of our business and every environmental interaction we have to protect the environment.

We are interested in our environmental performance programs and in particular our indigenous communities. Thanks to the ongoing dialogue and support from community-based initiatives such as the Saugeen Ojibway Nation's Coastal Water Monitoring Program, our relationship with these communities is as strong as it has ever been.

I also want to take a minute to talk briefly about our life extension programs.

We kicked off our Unit 6 major component replacement in January and we are currently in the process of removing the feeders in the reactor. This will be followed by pressure tube and calandria tube removal in 2021. While there is a lot of focus on major component replacement, our life extension project has been underway

since January 1st of 2016. This consists of work to replace or refurbish components such as heat exchangers or transformers that can be completed either while the units are operating or during a routine maintenance outage. This work is on time, it is on budget and it is a key element to ensuring that we manage a consistent scope of work that is levelized over the course of the next 15 years.

We are working closely with our friends at Ontario Power Generation and recognizing the success they have had at Darlington to share those lessons learned, while also sharing our experiences with them. We are also progressing the planning for the upcoming Unit 3 major component replacement scheduled to begin in 2023.

As my colleagues discussed last year during this meeting, with the life of our business extended to 2064, we continue to transform our workforce. This hasn't come without challenges. Knowledge transfer is a focus area for us. That means training, development, mentorship for a whole new generation of nuclear energy workers. Already we are seeing strong results, in particular in the area of operations and engineering pipelines.

I would also note that we are very committed to further diversifying the workforce. We believe that this will lead to not only better safety

performance but better operational performance and better business results. Looking at the benchmarks, the diverse workforces then have better results and in 2019 calendar year 31 percent of our hires were women. We are also putting a tremendous focus on non-traditional areas such as maintenance, where 30 percent of our hires were women, and also it comes to increasing the numbers of indigenous people working onsite. In 2019, 7 percent of our new hires were indigenous.

Let me briefly update you on medical isotope operation.

In 2019 we continued with the production of our medical grade cobalt program, Cobalt-60. It is used to treat brain tumours around the world and technology continues to be refined in ways to expand the use to treat other forms of cancer.

In terms of other isotopes, we recently made a formal licence amendment application to the CNSC to allow Lutetium-177 production. Lutetium-177 is a key isotope used in prostate cancer treatments and neuroendocrine tumours.

We are proud to have the Saugeen Ojibway Nation as partners on this project as we progress our business, making it safer and more innovative. Partnerships like this will be key to our mutual success.

We are committed to making the next 50 years look different than the past 50 years. SON's early involvement in this isotope project is very important in that process.

Finally, I will wrap up with a focus on our community engagement. Throughout the summer of 2019 we had 5,000 to 6,000 people come to our site on bus tours. It is a popular tourist attraction in Bruce County. Unfortunately, we did not run tours this year due to COVID-19. But we used this past year to reinvigorate our Visitor Centre with new infrastructure and new modern displays. Once the pandemic eases, we will open our doors once more to those who want to learn more about who we are and what we do.

Until then, knowing that we are one of the economic drivers in the Grey-Bruce-Huron Region, we undertook a number of initiatives to help our local municipalities and indigenous communities cope with the far-reaching impacts of COVID-19. These include programs such as Stronger Together, which provides local municipalities and businesses an opportunity to use Bruce Power's buying power to get better deals on safety equipment and PPE. It also includes our Be a Light campaign, which has committed resources on several fronts such as providing masks to local healthcare providers, temperature monitors to long-term and healthcare

facilities, and new winter coats or grocery store gift cards to individuals or families in need. Our goal is to help our friends, neighbours and communities fight COVID fatigue, while supporting mental health and local businesses.

We are proud to have strong community support and we do not take it for granted. We will continue to inform, encourage and listen to our community. The process we undertake through the Regulatory Oversight Report is part of that effort. It is something we continue to communicate with our stakeholders and talk to them about what we can do better and to really explain to them the broader nuclear family that we are part of.

Lastly, I want to thank the dedicated employees at Bruce Power for the work they do every day as nuclear professionals.

That is it in terms of the Bruce Power overview. I would be happy to answer any questions.

THE PRESIDENT: Thank you very much, Mr. Mudrick.

Maintenant, Hydro-Québec, avez-vous des commentaires?

--- Pause

M. LEBLANC : Monsieur Olivier ou Madame Désilets, êtes-vous avec nous? Vous êtes en sourdine, je

crois.

M. OLIVIER : Oui. Bonjour. Donald Olivier, pour le verbatim. Est-ce que vous nous entendez bien?

M. LEBLANC : Oui, on vous entend bien.
Merci.

M. OLIVIER : Bonjour. Désolé, la caméra n'a pas fonctionné. Donc, on est seulement au téléphone.

Donc, Madame la Présidente, Membres de la Commission, bonjour.

Je me nomme Donald Olivier, directeur des installations de Gentilly-2 à Hydro-Québec. Je suis accompagné de ma collègue Annie Désilets, ingénieure aux affaires réglementaires. Il nous fait plaisir de nous joindre à vous pour cette importante réunion annuelle.

Nous sommes ici aujourd'hui afin de témoigner des domaines de sûreté et de réglementation qui ont été évalués aux installations de Gentilly-2 en cours d'année 2019 par le personnel de la CCSN. Nous souhaitons également dire un mot sur l'état d'avancement du projet de déclassement de nos installations.

Pour l'année 2019, les activités de déclassement de nos installations s'inscrivent dans la phase de Préparation au stockage sous surveillance et au transfert du combustible. Cette phase comprend un certain

nombre d'opérations dont la réalisation nous permettra d'atteindre, entre autres, l'État de stockage sûr à sec.

Depuis 2015, nous travaillons à rencontrer les sept critères requis pour atteindre ce jalon. Voici un rappel de ces critères, d'abord ceux rencontrés, puis ceux à venir prochainement :

Depuis 2017, nous avons achevé l'entreposage de l'eau lourde des systèmes, hors du bâtiment réacteur;

Nous avons également finalisé la dernière phase de transfert des résines usées dans nos enceintes de stockage;

À la mi-septembre de cette année, nous avons transféré les dernières grappes de combustible irradié, qui étaient entreposées dans la piscine principale, vers nos enceintes de stockage à sec. En 2019, nous avons transféré 4 800 grappes, alors que cette année c'était un peu moins de 6 000, pour un total de 129 925 grappes entreposées dans nos modules CANSTOR.

Il est important d'ajouter que depuis la semaine dernière, les 35 grappes de combustible défectueux ont aussi été transférées dans ces mêmes enceintes de stockage. Ces grappes ont dû être encapsulées individuellement afin de reconstituer leur première barrière de protection radiologique. Il s'agissait d'une

première dans l'industrie des CANDU, et le tout s'est déroulé comme prévu.

Les trois dernières étapes à finaliser d'ici la fin de l'année 2021, celles qui nous permettront de déclarer l'État de stockage sûr à sec, sont les suivantes :

le drainage du circuit de refroidissement des boucliers;

le drainage des piscines de stockage et des piscines auxiliaires; et

la reconfiguration des bâtiments et des salles contenant des matières radioactives résiduelles.

Quand ces trois dernières étapes auront été complétées, nous finaliserons la Préparation vers l'état de stockage sous surveillance avec la mise en retrait de la majorité des systèmes conventionnels et la reconfiguration du site de Gentilly-2.

La cadence et le volume des activités demeurent élevés, qui plus est, dans le contexte de la pandémie et des mesures sanitaires spéciales que nous avons dû rapidement mettre en place aux installations de Gentilly-2 comme partout dans l'entreprise.

Inévitablement, un ralentissement s'est fait ressentir entre les mois de mars et de mai 2020, après quoi, tous nos employés ont pu reprendre leurs activités sur le plancher

ou en télétravail lorsque la situation s'y prêtait.

Malgré ce contexte, nos employés sont demeurés motivés à vouloir poursuivre le déclassement des installations. Je tiens d'ailleurs à leur souligner toute ma reconnaissance car sans eux, le défi serait tout autre.

À chaque année, Hydro-Québec sonde le niveau d'engagement de ses employés. Cette année, ce niveau se situe à 88 pour cent pour l'ensemble de l'entreprise. Aux installations de Gentilly-2, il est de 92 pour cent. Il s'agit d'un résultat exceptionnel qui mérite d'être souligné.

Un mot maintenant sur les doses de rayonnement et sur les données en matière de santé et sécurité au travail. En 2019, les doses de rayonnement, tant pour les employés que pour la population, sont demeurées faibles et bien en-deçà des limites réglementaires. Bien que Gentilly-2 ne soit plus en opération, nous maintenons toutes les mesures nécessaires pour préserver la santé et la sécurité des personnes, aussi bien que pour protéger l'environnement.

En ce qui concerne la santé et la sécurité au travail, nous sommes, en date d'aujourd'hui, à la 1337e journée sans accident avec blessure entraînant une assignation temporaire ou une perte de temps. La santé et la sécurité au travail est au cœur de nos priorités et nous

nous faisons un devoir d'en parler et d'agir quotidiennement si une situation le requiert.

Voilà ce qui brosse le portrait de l'année 2019 et de ce qui nous attend d'ici à ce que les installations de Gentilly-2 atteignent la phase de stockage sous surveillance.

Merci à tous de votre attention. Nous demeurons disponibles pour répondre à vos questions.

LA PRÉSIDENTE : Merci, Monsieur Olivier.

We will take a break now before we get to our interventions, but before we do that maybe I can ask Marc to give us an update on our Zoom challenges today, please.

MR. LEBLANC: Yes. As the President already alluded to, we have been experiencing technical and logistical challenges this morning with our Zoom session. So to assist us, I would ask you to not disconnect from the Zoom session during the break and for those who will be staying for the session this afternoon, do not disconnect during the lunch break later. If you need to -- you really need to disconnect, please reconnect 15 to 20 minutes prior to the restart of the meeting this afternoon. Thank you.

THE PRESIDENT: Thank you, Marc.

And we will resume at 11:10. Thank you.

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

Suspension à 10 h 52

--- Upon resuming at 11:10 a.m. /

Reprise à 11 h 10

THE PRESIDENT: Welcome back, everyone.

We are ready to resume our meeting.

Prior to opening the floor for questions from Commission Members, we will now proceed with the written submissions filed by the intervenors.

Maybe I will turn to you, Marc, for guiding us through this, please.

M. LEBLANC : Merci, Madame la Présidente.

CMD 20-M24.2

Mémoire du Grand Conseil de la Nation Waban-Aki

M. LEBLANC : Le premier mémoire est du Grand Conseil de la Nation Waban-Aki, tel qu'indiqué au document 20-M24.2.

Ce groupe autochtone a choisi de ne pas faire un exposé oral, mais M. Jean-François Provencher est disponible pour des questions. Je crois que vous avez réussi à vous joindre à nous, M. Provencher. Est-ce le cas?

M. PROVENCHER : Je suis disponible
présentement.

M. LEBLANC : Merci beaucoup.

Donc, est-ce qu'il y a des questions de la
part des membres? Any questions from the Members?

--- Pause

M. LEBLANC : Donc, je regarde pour voir
s'il y a des mains levées, et non, il n'y a pas de
question, Monsieur Provencher. Votre mémoire a bien été
compris par les Commissaires. Merci beaucoup de votre
participation.

M. PROVENCHER : Parfait. Merci. Bonne
journée.

M. LEBLANC : Au revoir.

CMD 20-M24.3

Written submission from the Curve Lake First Nation

MR. LEBLANC: The next submission is from
the Curve Lake First Nation, as outlined in CMD 20-M24.3.

Are there any questions from the Members
on this submission?

Dr. Berube...?

MEMBER BERUBE: Yes. Good morning. It is
nice to see you all. Thank you for your presentation.

On this particular submission I believe that I covered most of my questions yesterday. For those of you who weren't here, I guess you can review it on the Web from yesterday's proceedings.

Other than that, I wanted to just make a general comment that the dispositions by staff on this file are very good and in general I am satisfied with those responses.

MR. LEBLANC: Thank you.

President Velshi...?

THE PRESIDENT: Thank you.

To maybe supplement what Dr. Berube said, that we had a fair bit of discussion on an intervention from Curve Lake First Nation yesterday, but I would like to hear from the licensee's perspective, from OPG's perspective, on details around the level of engagement with this First Nation, please.

MS. MORTON: Yes. Hello, Madam Velshi. It is Lise Morton, Vice President of Nuclear Waste Management.

Can I confirm, can everybody hear me?

THE PRESIDENT: Yes, we can.

MS. MORTON: Thank you.

So yes, thank you for the question. Again, Lise Morton, for the record.

OPG acknowledges and welcomes Curve Lake First Nation's intervention and we certainly acknowledge the concerns that they have raised in their written intervention. We do meet with Curve Lake First Nation regularly as a member of Williams Treaties First Nations and of late the meetings have emphasized and spoken about the Darlington new nuclear project, the licensing process concerning production of Molybdenum-99, and other things of course in terms of Darlington refurbishment and concerns around the fisheries. So again, we regularly meet with them and we will continue to do so and certainly look forward to having engagement into 2021 about the various concerns that they raise in their intervention.

MR. LEBLANC: Thank you.

Any other questions from Members? I'm looking to see if there are any raised hands.

Not seeing any, we will proceed to the next submission. Oh, we have one. From whom?

Dr. McKinnon. I'm sorry, I missed you.

Please unmute. Dr. McKinnon, we may come back to this a bit later when -- I understand that there are issues with your phone.

MEMBER MCKINNON: Do you hear me now?

MR. LEBLANC: Yes. Thank you very much.

MEMBER MCKINNON: Okay. I'm sorry, I am

Internet-challenged this morning.

I just have a general question for CNSC staff. Curve Lake Nation mentioned in their intervention about the significant fish impingement exceedances and other reportable event occurrences. So I was just wondering if there is an automatic mechanism to convey such events or whether that has to remain for the periodic engagements. It was just a question of keeping people in the loop.

DR. VIKTOROV: Alex Viktorov, for the record.

I will start with this question and maybe colleagues from PAIRD will help me.

As I understand, there is no automatic mechanism to quickly inform of individual events at licensed facilities for interested groups, but we do have ongoing continuous engagement with stakeholders who may request information and we post important events on our website that are accessible by anyone who is interested. But it is not like an automated dissemination of information.

MR. LEVINE: This is Adam Levine. Would you like some additional information?

MEMBER MCKINNON: Yes, please go ahead.

MR. LEVINE: Okay. Thank you.

Adam Levine, Team Lead, Indigenous Relations and Participant Funding, for the record.

So with Curve Lake specifically, we are actually in the process of developing a long-term engagement terms of reference and part of that discussion will be about how we would communicate information like that directly with them in the most effective way. And also setting up regular meetings, quarterly meetings is what we are planning on, or more, depending on requests, and we will be working with Curve Lake on specific lists of topics based a lot on their intervention today will be a helpful roadmap for that. So we go -- based on the requests and interests of each indigenous group, we provide information proactively and also we encourage licensees to make sure that they are continuously providing information of interest to indigenous groups they engage with, especially around issues around fish and fish impingement as that is something Curve Lake has definitely expressed an interest in to OPG and CNSC staff.

MR. LEBLANC: Thank you.

MEMBER MCKINNON: Thank you very much.

MR. LEBLANC: So I am looking and there are no further questions on this intervention.

CMD 20-M24.4

**Written submission from the
Canadian Environmental Law Association**

MR. LEBLANC: So the next submission is from the Canadian Environmental Law Association, as outlined in CMD 20-M24.4.

I would just like to make one introductory remark in this regard.

The Commission notes that CELA's submission includes, in Appendix B, a report from Dr. Ian Fairlie, dated May 8, 2018, on tritium at Pickering. The Commission further notes that this report was duly considered by the Commission in the context of the Pickering relicensing hearing in 2018 and will not be reconsidered in the context of this ROR. ROR meetings are not a replacement for or a continuum of licensing hearings.

So this being said, are there any questions from the Commission Members on this submission?

Dr. Berube...?

MEMBER BERUBE: Yes. This question is for CNSC and maybe the operators can respond, too, if there is no clear visibility to it, but CELA mentions here basically they are curious about the nature of asbestos phase-outs at the NPPs. Where are we with regard to asbestos removal and

replacement across the fleet of NPPs at this point?

CNSC, would you comment first?

DR. VIKTOROV: I will ask Lee Casterton to provide an update on where we are with the asbestos file.

MR. CASTERTON: Good morning. Lee Casterton. I am a Senior Regulatory Program Officer with the Directorate of Power Reactor Regulation.

So the *Prohibition of Asbestos and Products Containing Asbestos Regulations* came into force at the end of 2018. We are currently in the four-year exemption period that those Regulations had for the nuclear industry. And just to be clear, during this period it is not an exemption from the Regulations entirely. This period is meant for the licensees to actually determine which products they have that contain asbestos and which have feasible and technical alternatives that can be used. So during this four-year period, licensees are requested -- or are required actually to submit to Environment and Climate Change Canada for permits for the use of asbestos-containing products. This also requires licensees to abide by the reporting and asbestos management plan requirements in the Regulations as well.

I would ask, though, that the licensees and Environment Canada, who is online today, provide a little bit more in terms of what has happened since coming

into force in 2018.

MR. LEBLANC: So any -- Ms. Tarle from OPG?

MS. TARLE: Yes. Good morning. Emily Tarle, for the record.

OPG has an asbestos management plan and is on track to phase out asbestos use at our facilities by December 31st of 2022. We have also taken steps through our supply chain to identify and prevent the purchase of any asbestos-containing material and source appropriate alternatives, and any asbestos used is reported to the CNSC, as required by the Regulation. Thank you.

MR. LEBLANC: Thank you.

Any other licensees want to -- I am just looking at the Raised Hand function if you wanted to weigh in. No? Or Environment and Climate Change Canada?

MR. KIM: Duck Kim, for the record. Can you hear me?

MR. LEBLANC: Not very well, no. It is very, very low. You have to increase your volume, Mr. Kim.

MR. KIM: Okay. My microphone was in the wrong place. My apologies.

Duck Kim, for the record, Environment and Climate Change Canada.

Yes, the *Provision of Asbestos and*

Products Containing Asbestos Regulations prohibit the new use and/or sale or import of asbestos-containing products. For those facilities that have had asbestos already in use from before December 30th, 2018, those activities have that exemption. However, ultimately the removal of asbestos substances will be required, except in the cases where there is no technically or economically available alternatives for asbestos-free alternatives, those requirements are excluded or are extended. So that would be the current status of the application of the Regulations for the nuclear industry.

MR. LEBLANC: Thank you.

We have Mr. Nouwens from NB Power.

MR. NOUWENS: Thank you.

I just wanted to echo the comments that we heard from OPG, that we are on track with these Regulations. And I also wanted to add that, you know, this has been a strong program at our station from a personnel safety point of view that we have had in place for a long time and we have very stringent requirements to deal with the current situation at the station for any particular uses. And again, I just want to reaffirm that we are on track with our regulatory requirements.

MR. LEBLANC: Thank you.

I note that we have a raised hand from Dr.

Demeter and President Velshi. If it is not related to asbestos, I will move to Dr. Demeter.

THE PRESIDENT: Mine is related to asbestos.

Given the high profile and importance of this file, I think it would be appropriate to include this in the ROR, that the nuclear facilities are well underway to meet the regulatory requirements about the phase-out and I think next year's ROR should include an update on where the asbestos phase-out plan is.

DR. VIKTOROV: We will take note of it and include the information in the next ROR, by all means. Thank you.

MR. LEBLANC: Thank you. My apologies, Madame la Présidente.

So Dr. Demeter?

MEMBER DEMETER: Thank you very much for the information.

And the question is for the Ontario Office of the Fire Marshal and Emergency Management, if they're present. Just to get -- because CELA has mentioned a number of times about the status of the PNERP Technical Report -- get a sense of where it's at, will it be publicly released, and has CNSC staff been privy to a draft copy along the way?

MR. LAZARUS: Thank you very much. For the record, Ray Lazarus in Ontario, and thank you, Madam President, for inviting us to answer questions from Commission Members related to provincial nuclear emergency management.

With respect to the technical study, we appreciate the concerns related to delayed release due to competing priorities, most notably, since February 2020 those posed by COVID-19 pandemic response. However, we are pleased to inform that we will be able to release the report to CNSC staff shortly and we will follow up with them shortly as well.

Thank you.

MEMBER DEMETER: So, sorry, if I may follow up, will it be publicly accessible as well?

MR. LAZARUS: It will be publicly accessible as well. Thank you. Yes.

MEMBER DEMETER: Okay, thank you very much.

And CNSC staff, have you been involved in a participatory way with the report?

DR. VIKTOROV: Alex Viktorov, for the record.

I'll ask our colleagues from EMPD to provide an update on where we stand with this report.

MS. KANASEWICH: Good afternoon. My name's Elaine Kanasewich. I'm the acting director for the Emergency Management and Programs Division.

As of right now, we participate collaboratively with the Province with regards to the Provincial Nuclear Emergency Response Plan, which the technical study is a part of. So we certainly were able to provide comments to the PNERP. And we are able to participate in exercises along with the Province to assess their response during nuclear emergencies per the plans outlined in the PNERP.

And as noted before, we were not able to see a copy of the technical study, but we are looking forward and anticipating the release of this technical study so that we can conduct analysis and adjust accordingly.

Thank you.

MR. LEBLANC: Thank you.

President Velshi?

THE PRESIDENT: Before I get to my question, just a clarification from OFMEM. I'm really happy that you're almost ready to release the report. But what does "shortly" or "imminently" mean? Are you talking about days? A week?

MR. LAZARUS: Thank you for the follow-up,

Madam President. We will be working with our communications branch on a roll-out plan, and once that is known, we'll be able to provide a more concrete timeline. But as of now, I cannot give you a specific date. I'm sorry.

THE PRESIDENT: So Mr. Lazarus, given, you know, it's been over a year while we're waiting for a release. And we understand that this year has brought new challenges. But if you could keep CNSC staff informed as to when you expect to release this report, I think it will be very helpful, because if it's going to be further delayed, we may want to raise the issues and see how it can be accelerated.

MR. LAZARUS: Acknowledged, and we will certainly do that with respect to liaising with CNSC staff. Thank you.

THE PRESIDENT: Thank you.

And my question was around CELA's recommendation 12, and this is around climate resiliency and what should the regulatory oversight report cover in that. And we had extensive discussions yesterday on uranium and nuclear processing facilities, fuel cycle in processing facilities. But Dr. Viktorov, I wondered if you could comment for the nuclear power plants in an assessment around climate resiliency and what one can expect would be

covered in future RORs around that, please.

DR. VIKTOROV: Alex Viktorov, for the record.

I'll start with some general remarks and then ask a specialist in environmental groups to provide specific details.

But as you've heard previously, nuclear power plants, as other nuclear facilities, certainly consider external impacts, including environmental and climactic or weather impacts on the safety of the operations. And it's done on a periodic basis with consideration of best science and data that we and licensees collect continuously. And awareness, so we take proactive measures or incorporate new requirements in the regulatory documents or standards.

How it's done specifically for nuclear power plants, I'll ask our specialist in environmental divisions to provide additional details.

MR. McALLISTER: Thank you, Dr. Viktorov. Andrew McAllister, director of the Environmental Risk Assessment Division.

To maybe further expand on some of the -- what Dr. Viktorov mentioned, it's really looking at the upfront looking from an environmental assessment process and how climate change is considered into the -- whether

it's a previous environmental assessment under the *Canadian Environmental Assessment Act*, or forward-looking in the *Impact Assessment Act*. And then into actual periodic updates, that's facilitated through both the updates to environmental risk assessments as well as updates to safety analyses which looks at external hazards.

Those have a five-year frequency. And so when we acknowledge CELA's request on annual reporting on it, that makes that somewhat challenging, given the frequencies. What makes sense from our perspective and one that we do, does get reflected or will get reflected in other aspects of these things such relicensing, given the typical terms now, we're looking at five to 10 years. That dovetails well with the ability to provide updates on that.

Perhaps to illustrate with a specific example, because we did hear a little bit yesterday, Dr. Shizhong Lei and both Cameco gave us a little outline with respect to the Port Hope Conversion Facility. Dr. Lei is also on this call, and he can illustrate with an example of one of the nuclear power plants how that was looked at.

So Dr. Lei, if you're ready, if you could perhaps illustrate with an example, please.

DR. LEI: Shizhong Lei, for the record.

And specifically nuclear power plants actually are looked at even like more carefully because of

the potential impact of climate change. So all the nuclear power plants in Canada have been conducting periodical safety assessments. And external hazards and the impact of climate change on them are especially noted during these assessments.

And we think all the nuclear power plants during their assessment of external hazards, external flooding for example, they would have been looking at the probable maximum precipitation which is the theoretical upper limit of precipitation at one particular location. So that gives a huge safety margin.

So when CNSC staff look at the resilience capability of a site, we would look to see whether they have sufficient safety margin so that if an extreme flood event or storm happens, there's still sufficient safety margin. And also the defence in depth is always a consideration, so even if something happens unexpectedly, there would be still an updated contingency plan in place so that the power plants are protected.

Give as an example, at Point Lepreau, right after the Fukushima accident, US NRC conducted a tsunami assessment on the Atlantic coast. So Point Lepreau happened to be there, so they got the benefit of being assessed. And it found out there was -- even under a hypothetical tsunami scenario there would be no impact to

the safe operation of the site as shown in their assessment.

And Point Lepreau, they also conducted their own site-specific flood analysis based on their site-specific data, because the US NRC didn't have very detailed local information on the Canadian site. From Point Lepreau's assessment, they also assumed that if water, the sea level, for example, rises for more than a metre, what will happen. And their conclusion is that even with that consideration, the wave run-up as a result of the extreme flooding still cannot reach the floor level of the power plant.

And other nuclear power plants in Canada conduct a similar assessment as well.

MR. LEBLANC: Thank you.

So I've got Dr. Demeter.

MEMBER DEMETER: Okay, thank you.

I think this is an issue that might benefit for the public's clarification, because it's brought up a number of times relative to emergency planning that -- relative to jurisdictional issues. So within the fence, CNSC and the licensee have primary responsibilities and jurisdiction. And it's mentioned at times that, you know, that the jurisdiction beyond the fence is at the provincial level.

But I wanted to make some assurances that in the event -- the hypothetical event that the emergency measures beyond the fence relative to protection of people and the environment was not deemed to be adequate or sufficient, that CNSC does -- although they might not have jurisdiction on emergency planning beyond the fence, they have jurisdiction on the operations within the fence, and that part of those operations are contingent upon an appropriate beyond-the-fence emergency plan for measures.

So I wanted CNSC staff to confirm that irrespective of jurisdiction, the safety of people and the environment beyond the fence have to be considered, and that's rolled into the licensees' application considerations.

DR. VIKTOROV: Alex Viktorov, for the record.

Yes, indeed, I would like to confirm that that aspect is not forgotten. In fact, emergency preparedness and response is one of the safety and control areas. We establish CNSC requirements in this area through REGDOCs and CSA standards, and we verify our licensees perform against those requirements. This is done through various activities such as inspections, participation in small- and large-scale exercises.

But I would like to request our specialist

in emergency management and response group to provide additional detail in this regard.

MS. HEPPELL-MASYS: Perhaps I can begin before I pass along to Elaine Kanasewich. This is Kathleen Heppell-Masys, for the record. I'm the director general of the Directorate of Security and Safeguards at the CNSC.

And I can -- to elaborate a little bit more on how we discuss those various jurisdictions, as we do regularly, observing our emergency exercises, we also practise those little debates, if you will, when we think that things could be going in a space where it could be a little bit more nebulous. So certainly we discuss those matters via the exercises.

There's also committee structures that are in place that we -- where we also discuss all those various roles and responsibilities. And again, I'll pass it on to Elaine, who can elaborate a little bit more about those various fora where we discuss those issues. But certainly we have at CNSC the mechanisms to discuss, even challenge at times, but certainly we understand each of our jurisdictions.

Elaine, did you want to add to the fora that are available?

MS. KANASEWICH: Yes, thank you.

Elaine Kanasewich, for the record.

Indeed, there are several ways that the CNSC interacts with their off-site partners. For example, if the Province does become overwhelmed, we are part of the Federal Nuclear Response Plan, so we can also -- that would kick in, which would bring in additional federal resources to the provincial response. The CNSC is part of that.

And additionally, within REGDOC-2.10.1, there is a requirement to have arrangements in place with off-site authorities to work collaboratively, so this would be fire brigades and emergency responders. So there would be that on-site/off-site collaborative work to be done and to respond effectively to an emergency.

And of course the CNSC is one of the hubs where we do coordinate with external/internal stakeholders, and we constantly review emergency plans within these collaborative forums.

And lastly, as mentioned before, there's significant amounts of collaborative drills and exercises that have encompassed a variety of municipal, federal, provincial, and operator stakeholders.

There is lastly the memorandum of understanding that the CNSC has with the Province of Ontario, where we can engage in multiple different discussions on emergency preparedness and planning.

So there's quite a few avenues for

collaborative discussions on planning and as well as exercising of emergency plans.

MR. LEBLANC: Thank you.

Dr. Berube?

MEMBER BERUBE: Yes, I just want to follow up on something that I heard from Environment and Climate Change yesterday, and that is that they're actually still developing their resilience models for climate change.

So given that there's not a strong direction from this organization to CNSC, CNSC staff, could you elaborate on how you generate scenarios for emergencies. You know, is this based on a what-if model? Are you getting international advice on this? Collaborative advice on what you should be analyzing? And, you know, what are the potential consequences of that? Could you just elaborate on this, because it wasn't very clear yesterday how you're actually designing your climate change models at this point. I think they're evolving, but if you would get into that for me, I would appreciate it. Thank you.

DR. VIKTOROV: Alex Viktorov, for the record. If I may ask for clarification, is it a question related purely to climate change impacts or is it in connection to emergency response preparedness?

MEMBER BERUBE: Well, you know, basically

climate change can lead to an emergency response preparedness issue, right, so but what I really want to know is when you're looking at climate change issues, sometimes they come up quickly, such as algae blooms and these kind of things. Are they foreseen? Are they unforeseen? How do we actually model what could potentially come up with climate change? How are you basically validating that model?

DR. VIKTOROV: Okay, Alex Viktorov, for the record.

This is a great multi-pronged question, and I believe several CNSC groups can contribute to provide a complete picture. So I'd like to start with environmental protection groups to, again, supplement on how we identify likely environmental impacts, and then perhaps emergency preparedness groups to also elaborate how these impacts are or may be incorporated in this emergency model, and then we can wrap up with a kind of an overview of how we feel that we are well prepared to address these challenges.

So over to Andrew McAllister.

MR. McALLISTER: Thank you, Dr. Viktorov.
Andrew McAllister, for the record.

Important aspect is obviously to make sure that when we look at our regulatory framework with respect

to climate change is that we have that covered off. And we are going through that process, for example, where we're looking at advancing flooding into the regulatory framework and looking into that into more detail.

But to get more to your specific question on what models are looked at or what sort of inputs go into those external hazard examination, I will again pass it to Dr. Lei for some more detail on that.

DR. LEI: For the record, my name is Shizhong Lei.

CNSC staff do not work in isolation. We have close collaboration with our national and international counterparts. We have been engaging in, for example, the NEA Working Group on External Hazards. And CNSC staff is in there, one of the bureau members. And so we're not just participating, we are also looking to the direction.

And we also -- for example, there is a group who works closely with the World Meteorological Organization. And we share experiences among member countries and lessons learned. We also identify future gaps and we, for example, develop also technical documents and our experiences internationally.

So with regard to this scenario, we often -- not only we look at what the specialists and

meteorologists have been doing in climate change studies, we also develop our own nuclear-site-related specific scenarios. So when developing these kind of scenarios that might have contingency or emergency planning implication, we always look at for example the extreme case or the bounding scenarios. So that would cover not only the uncertainties related to climate change, but also other unforeseen factors.

DR. VIKTOROV: If I may -- oh, sorry Peter, go ahead.

MR. ELDER: Okay, go ahead.

Sorry, just want to sort of give you an overall impression, Dr. Berube, about what we've been doing so far. So I'm Peter Elder; I'm the chief science officer.

You can see that there are -- in this question, there are actually a lot of points that intersect. So it's how we feed the processes from the flooding analysis that will also go into in fact a number of the safety analyses. So there's environmental risk analyses, but it also goes into our normal -- into our probabilistic risk analyses and then some of the other safety cases.

So as Dr. Lei pointed out, we normally on all these things we want to make sure that we're making very conservative assumptions. So while we're waiting for

some of these more detailed climate models to develop, what we're doing and seeing is we always say, Is there any question? Are they questioning our conservative assumptions? And as you saw the example yesterday, we haven't got to that point yet where we feel the climate models would then push us beyond those assumptions. So that's the approach we're taking.

And so while some things -- and you used the example of the algae blooms, that's another area where they already have had -- all the licensees have to have protection against algae blooms and the mechanisms to deal with them for a long time. So it's a question of saying they should be able to react. Yes, they can be more frequent, but all the mechanisms are already in place.

So and all these reports, these safety analyses are all routinely updated. So they're all updated on at least a five-year cycle. So as the new knowledge from climate change comes in, they will be incorporated into those analyses.

MR. LEBLANC: Thank you.

So I'm just going to verify with the members, Dr. McKinnon, I cannot see a raised hand, but you're using your phone. So I don't see anything, and Mario is looking at me and there's nothing. And I just want to make sure, Dr. Lacroix, do you have any questions?

MEMBER LACROIX: No, I do not have any questions.

MR. LEBLANC: Okay, thank you. So, you're still with us; thank you very much.

So, in that regard, Madame la Présidente, we'll move to the next submission which is from Swim Drink Fish Canada/ Lake Ontario Waterkeeper as outlined in CMD20-M24.5.

Any questions from the Members on this intervention?

Dr. McKinnon?

MEMBER MCKINNON: Okay. Can you hear me okay?

MR. LEBLANC: Yes, we do.

MEMBER MCKINNON: Okay, thank you.

My question may be best for the Department of Fisheries, but the intervention mentioned the large exceedance of the fish impingement at Pickering in the last two years, and in the response, there was some hypothesis for the quotas that were mentioned, but my question is, is this problem sufficiently understood to develop remedial action? And, are there any further investigations planned on this?

DR. VIKTOROV: I would like to ask Jennifer Thomas from Fisheries and Oceans Canada to take

this question.

MS. THOMAS: Okay, good morning, Members of the Commission. Can everybody hear me okay?

MR. LEBLANC: Yes, we do.

MS. THOMAS: Okay, great. I'm going to keep my video off because I do have a bit of a network issue this morning.

A great question from the intervention.

My name is Jennifer Thomas, I work for the Department of Fisheries and Oceans, and I'm the manager of Regulatory Review, for the record.

The confusing thing about some of these authorizations is that there are a number of reporting values and unfortunately with the Ontario Power Generation, the Pickering facility, we have reporting values in kilograms and we have reporting values in age one equivalents, and we are working with OPG to tighten that up, as well as with the Canadian Nuclear Safety Commission. We really need all of our reporting requirements in one sort of currency, so-to-speak. We can't have age one equivalents in kilograms because you can't compare the two. So, the challenge here is that OPG had some exceedances in the reporting values of, I think it's about 3600 kg of fish, give or take, and they were to meet with DFO and the Canadian Nuclear Safety Commission to discuss that. So, we

have been doing that through the past year.

The challenge, though, is that we really need to get the death of fish values in the age one equivalence to really make a determination whether or not we have a compliance issue, or the requirement for similar offsetting.

So, hopefully, that addresses the question. We've got some work to do and we have been meeting to get that rectified and we can certainly report back.

Thank you.

MEMBER MCKINNON: Thank you. My question was more along the lines of if the course for the fish impingement was understood, because in the staff ROR response, it seemed there were many factors which you know seem to indicate that it was a fairly complex problem. And in order to really avoid that, you know, occurring in the future with such volumes, you know, the problem would need to be understood fairly well to, you know, develop a good solution. That was more the nature of my question.

MS. THOMAS: Thank you for the clarification. It's Jennifer Thomas, for Fisheries and Oceans, for the record.

We are going to be working with OPG to look at that data in more detail and, unfortunately, at

this time I can't really speculate beyond what's already been provided. We have seen that a large number of the fish being impinged are species like alewife and gizzard shad, and these species are susceptible to strong changes in water temperature which can result in a natural die-off which might be compounding the problem at the Pickering facility. But I think everybody that's reviewing this data agrees that we need to do a bit more of investigation on this. And we have asked OPG and we will be sitting down and talking to them more about this, to maybe provide some additional data about water temperatures and things like that, so that we'll have a better insight as to why we're getting these larger fish kills.

Thank you.

MR. LEBLANC: Thank you. Before I go to Dr. Berube, did OPG or staff want to add anything to this?

MR. McALLISTER: It's Andrew McAllister, here. Thank you, Mr. Leblanc.

All I could add to I guess give you some assurances, Dr. McKinnon, is, with these episodic fish events it's very important from both CNSC's perspective and DFO's perspective and that, likewise, of licensees, to determine if this is attributable to natural phenomena happening in the lake or is it attributable to the operations of the facility? Very key things to determine.

DFO has provided guidance to OPG on the kinds of information. Ms. Thomas made reference to data, exactly that; things like lake current speed and direction, temperature. When something like this happens have you canvassed the shoreline to look for evidence of other dead fish? What was the operational nature of the facility in question?

So, there's a whole host of information that we expect -- and when I say we, the regulators, CNSC and DFO, that OPG would need --has to -- needs to provide, and would need to provide in the event of future incidents of this nature.

MR. LEBLANC: OPG, Mr. Franke.

MR. FRANKE: Yes, for the record, John Franke, the senior vice-president for the Pickering Nuclear Station.

The requirements of the regulation are that when we exceed the take limits that we do provide reports to the Department of Fisheries and Oceans, and subsequent to those reports we have completed a third-party assessment of the cause of the larger numbers that we witnessed in 2019. And the conclusions of that third-party report, were that the larger number of impingement activity that we saw that year was principally due to non -- well, it was actually not due to plant events, not due to plant

spills or thermal plume issues, but in fact were effects occurring in the lake. Notably, the largest take we believe was due to a high wind event which caused a turnover of the temperature of the lake and caused a large number of fish that were susceptible to temperature change to die and subsequently end up in our -- in our impingement screens.

MR. LEBLANC: Thank you. Dr. Berube.

MEMBER BERUBE: Yeah, just in continuance of that, because the volumes here are getting quite high with the fish impingement, what offsets are in place to -- to deal with this long-term should the situation persist?

MR. FRANKE: This is John Franke, again.

We do have offsets that we have in place. We have a number of offsets. Again, I do want to emphasize we recognize the importance of -- of being -- of having the least impact on the environment, including this nature. And what I'd like to do is turn over to Ms. Christina Bramma.

She can provide a little more detail with regard to our offset programs here with Ontario Power.

MS. BRAMMA: Good morning. For the record, my name is Christina Bramma, I'm the senior manager of Nuclear Environment at OPG.

As Mr. Franke mentioned, we do have offsets that we are currently working on. These offsets

are listed in our current *Fisheries Act* authorization, and in addition to this based on the impingement results that we have seen over 2018 and 2019.

Part of our discussions with DFO and CNSC are around looking at potential follow-up actions including further offsets as a result of the higher impingement values.

Thank you.

MR. LEBLANC: President Velshi.

THE PRESIDENT: Thank you. A question for OPG, a concern that the intervener has raised about Pickering disaggregate groundwater data not being made available. Do you have an update on that, please?

MR. FRANKE: Again, this is John Franke with -- the senior vice-president for Pickering.

Yes, there has been a request to provide details of our ongoing monitoring of tritium in the groundwater. As in the past, we have provided that information and have improved the ability to monitor that online through a number of ways.

That being said, we have made the decision to go ahead and provide that additional information and we've reached out to the interveners in that party, and we are trying to -- we've offered a few dates in the first quarter next year to sit down and not only provide the

data, but talk through the details since it is raw data they've asked for. So, we are committed to provide that, and we will be doing that the first quarter.

THE PRESIDENT: Thank you. I very much appreciate that.

MR. LEBLANC: So, I'm just looking to see if there is any raised hand. I note, Dr. McKinnon, I saw that you tried to get in, but it may have been for other reasons, so any further questions, Dr. McKinnon?

MEMBER MCKINNON: Yes, it was a more or less a comment I was going to just continue. Thank you for the clarifications on my question.

The point I just wanted to relate was, since the cause seemed to be attributed more to natural causes, this really gets back to the question that Dr. Berube had brought up earlier about climate resilience and how you know the effects of that can be taken into account in future planning.

And, so I guess the question that would arise from that, you know, if this was an issue related to changing conditions in Lake Ontario, is this the type of thing that could be foreseen or planned for in considering how to accommodate climate resilience or how is that gone about? Is this something that could have been foreseen, or would it be impossible; these are just chaotic events? If

perhaps staff could comment on that?

DR. VIKTOROV: Alex Viktorov, for the record.

Again, to provide a very high-level kind of overview of this situation, indeed, we expect, and the licensees are preparing to better understand and model development of conditions around facilities in response to changing conditions in the lake or atmosphere.

Again, that's -- and that is quickly developing and we are quite interested in it and we know that licensees are working towards it. Indeed, it brings something from us in both protection of environment and operations. For example, OPG implemented models to better understand the algae blooms in (indiscernible). But I would like to ask our environmental risk assessment specialist to provide additional information in this regard.

MR. McALLISTER: Thank you, Dr. Viktorov.
Andrew McAllister, director of the Environmental Risk Assessment Division.

As alluded to, it's an evolving area and we're fortunate that we have our memorandum of understanding with Environment and Climate Change Canada that helps the facilitation and provision of information and updates in the science through that means, and we can

then integrate that as appropriate, whether it be in a risk assessment perspective or for example in an external hazard perspective.

The other aspect, and Dr. Lei made reference to it, is having the margins. And I'm going to use and Ms. Thomas from DFO could -- could complement the answer, but typically when establishing an authorization and the offsetting associated with it, the offsetting is of such a magnitude that there is -- there is margin built into that offsetting, oftentimes, and -- and/or the ability to increase that offsetting exists through their regulatory process so, therefore, you know, it might be difficult to -- to predict upwellings, as an example. The sort of the framework is there in place to be able to address that through aspects such as the ability through the offsetting and the ability to integrate new science on that periodic basis.

MEMBER MCKINNON: Thank you, very much.

MR. LEBLANC: So, I don't know if DFO wanted to add anything?

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

Yeah, I'd just like to support what Andrew has said. Within the authorization we've got flexibility to add more offsetting if required. As I mentioned, we do

need to do a bit more analysis on the data to kind of see where we're sitting with regards to compliance and with regards to whether or not additional offsetting is required.

We've got the ability to amend the authorization to add additional offsetting and I think with the other piece that really has been raised here is just about the reporting, and I think with these, for lack of a better word, natural events, where we have situations on Lake Ontario where we get this cold water upwelling and we can have natural die-off of species like alewife and gizzard shad, we need more -- more stringent reporting on this, and a quicker response time from OPG so that we can look into this in more detail. Looking at data like this a year later is quite difficult and we certainly worked with our science program at DFO to help the Ontario Power Generation team work on reporting requirements, and will be continuing to do that over the next year.

Thank you.

MR. LEBLANC: Thank you. So, I don't see any further questions on this submission, so we'll proceed to the next one which is from Mr. Gordon Dalzell as outlined in CMD20-M24.6.

Any questions from the Members on this submission?

Dr. Berube.

MEMBER BERUBE: Yes, the intervener in this case brings up some questions about the probabilistic safety analysis (PSA) and some concerns about that. And, actually, I would like to know where we stand on the whole station PSA's modelling. The last time I checked on this we were still on progress.

Could you bring me up to speed, CNSC, on where we are across the fleet for the whole station PSAs? Thanks.

DR. VIKTOROV: Alex Viktorov, for the record. I'll ask our probabilistic safety assessment group to provide an answer to this.

MR. YALAOUI: For the record, my name is Smain Yalaoui.

For the question regarding the stages of the whole site PSAs, I think we already presented to the Commission Meeting in December 2017 about the Pickering. So, Pickering has completed its whole site PSA and the results were presented to the Commission Meeting.

For the Bruce Power, they provided the methodology for whole site PSA which is similar to the one provided by Pickering. It's COG, CANDU Owners Group, methodology and they provided risk aggregated values in 2019.

So, they did it for Bruce, they did it for -- separately for Bruce A Station and Bruce B Station and they provided as well the aggregated results for both stations. And the results are compared to what we call a single unit large release frequency, so for this -- for this, Bruce Power, we have the -- the aggregate results.

For Darlington, OPG submitted the whole site or the aggregated risk values in the 2015 hearing, and, as part of the whole site PSA for this Darlington Station, OPG is planning a risk aggregation calculated -- based on the 2020 PSA update, because right now they are in the process of updating their PSA and come up with new results, so the aggregated results with the new PSA is going to be provided once the 2020 update is completed.

I hope this answers your questions, Dr. Berube.

MEMBER BERUBE: Yes, that's fine. Thank you very much.

MR. LEBLANC: Thank you. I'm looking if there's any other raised hands, and we have President Velshi.

THE PRESIDENT: Thank you, Marc.

Maybe the first question is to Point Lepreau and CNSC staff on site there. There is a special personal relationship with this intervener and I wonder for

some of the specific concerns that the intervener has raised, have you reached out to him, or are you planning on reaching out to him either to give him the information or respond to some of the questions that he has raised; concerns that he has raised that the Commission may have addressed like you heard from Mr. Leblanc earlier on around Dr. Fairlie's report that the Commission had spent time on, but the intervener is clearly concerned about some of the statements in there. So, maybe I'll start with Point Lepreau and let me know what your thoughts were, whether you were going to do anything with the intervention?

MR. NOUWENS: Thank you. Jason Nouwens, for the record.

Before I turn it over to Kathleen Duguay who is our manager of Community Affairs, I just want to give a high-level statement that Gordon Dalzell is one of our public members that has expressed interest in our operations for several years now and we have strong relationship with him, and we do meet with him regularly. And, as you know, and as we've talked about in previous meetings, you know transparency is very important to us as a station, so we do have a strong relationship with Gordon and we will work with him on the aspects that he's identified that are important to him, but also anything else that he has concerns on. We are always an open-door

policy with him.

But I'll turn it over to Kathleen for some more specific comments on that, please.

MS. DUGUAY: Thank you, Jason. For the record, my name is Kathleen Duguay. Can you hear me?

THE PRESIDENT: Yes, we can.

MR. LEBLANC: Yes.

MS. DUGUAY: Thank you. A really great question.

When the intervention came in, of course the article and the issues -- some of the issues that were raised in the intervention, we were already -- we had already reached out to Gordon because we know he had interest in that kind of information, so we had provided him with the information.

The other piece, too, when something is raised in an intervention, we also seek to understand, like Mr. Armstrong indicated this morning, because sometimes there's something behind that -- that statement that is underlying, so we need to understand where is this coming from and we put it in context.

We met with Mr. Dalzell. We also brought it up Community Relations Meeting because we share with our community some of the interventions that comes in and the interest, and we put in perspective. We took that

opportunity to update our website and provide more information on radiation protection, radiological releases. And a lot of that information was there already, but we enhanced it based on the interests of the community and -- and our interveners.

The other piece that was interesting is, when I went to the community, amid COVID challenge and everything else, we can still have some interactions, what's going on, what is being talked about, because we are a small community, so the newspaper is like everywhere, right, so some of the comments I got is, 'Hey, if Point Lepreau failed, if there was something unsafe, they would have been at us before the newspaper.' So, that was very reassuring of our relationship with the community.

But thank you for the question.

THE PRESIDENT: And then thank you for sharing that because I think what you are expressing, Ms. Duguay, to us, is one that gives the Commission a lot of reassurance that these interventions are taken seriously; that you take personal responsibility to follow up and address those concerns. So, I thank you for that.

Staff, on site, any comments from you?

DR. VIKTOROV: Heather Davis, from CNSC staff on site, will say a few words.

MS. DAVIS: Thank you. Heather Davis, for

the record.

CNSC staff regularly attend -- the site staff regularly attend community liaison meetings and the items surrounding -- the concerns surrounding tritium releases were specifically discussed at the most recent community meeting. And at that meeting, I had a member of our Health Sciences and Environmental Compliance Division join us to answer any questions from the community with regards to these -- this item.

Thank you.

MEMBER LACROIX: Thank you.

So we have OPG, Dr. Vecchiarelli.

DR. VECCHIARELLI: Yes. Thank you.

For the record, Jack Vecchiarelli, Vice-President of Nuclear Regulatory Affairs and Stakeholder Relations.

I'd like to follow up on the point that was discussed earlier regarding the whole site risk assessment, in particular for Darlington. I'd like to point out that we did do a risk aggregation in 2015 as part of the Darlington licensing renewal.

And while there's no requirement in RegDoc 242 to do a whole site PSA, we have been very strongly engaged with the international community and, as you know, we piloted and championed the Pickering whole site PSA.

At the moment, we're waiting to see what the international consensus looks like before we embark on any additional whole site risk assessment, and it's very important that we have an international consensus before doing any additional work on that front.

So we have done it for Darlington, we have done it for Pickering, and we continue to look across internationally and in collaboration with our industry partners as to what is the most meaningful approach to undertake this sort of assessment.

The recent results that we have for the latest Darlington PSA updates are very positive. We've meeting our safety goals. The conclusions regarding whole site risk are not changed from that perspective because we are meeting the safety goals.

I would like to put that on the record.
Thank you very much.

CMD 20-M24.7

**Written submissions from the
Canadian Nuclear Workers' Council**

MR. LEBLANC: Thank you.

So I'm not seeing any further hands up, so we will move to the next submission, which is from the

Canadian Nuclear Workers' Council as outlined in CMD 20-M24.7.

Any questions from the Members on this submission?

CMD 20-M24.8

Written submission from the Power Workers' Union

MR. LEBLANC: Not seeing any, we will move to the next submission, which is from the Power Workers' Union as outlined in CMD 20-M24.8.

Any questions from members on this submission?

I don't see any raised hands.

So this concludes the written submissions, Madam la présidente.

THE PRESIDENT: Thank you, Marc.

We'll now open the floor to the Commission Members for other questions that they may have on the Regulatory Oversight Report.

And we'll start with Dr. Lacroix.

MEMBER LACROIX: Thank you, Madam la présidente.

I do have a number of questions for the various sites.

So what I'd like to do is to follow the disposition of the ROR. And my first question is with regards to fraudulence and counterfeit. And my question is directed to Staff.

Is the Staff trained and equipped to debunk and to detect fraudulence and counterfeit among the licensees but, most of all, among the supply chain?

And do Staff work hand in hand with the licensees to avoid these kind of fraudulent events?

DR. VIKTOROV: Alex Viktorov, for the record.

I'll ask Pierre Lahaie to provide a status update where we stand, where CNSC expectations are with regards to regulation and requirements for fraudulent and suspect items.

MR. LAHAIE: Pierre Lahaie, for the record. Sorry, folks.

In response to your question, Dr. Lacroix, we've been looking in a certain amount of detail in the last five to 10 years on counterfeit, fraudulent and suspect items. Five years ago we updated the Regulatory Document 311 for reporting requirements and, subsequent to that, we started getting reports from licensees.

Our staff have been trained and are trained to look into this. Every time we do a supply

management inspection, we have, at a high level in the organizations of our licensees -- our NPP licensees -- have had discussions on this.

And since we started working at assessing whether licensees have a good system in place or not, we've ascertained that, in fact, they do and they've done training. And for counterfeit items, the detection rate is very, very good with the NPPs.

The one item that is a bit tricky is fraudulence, as you can imagine, and lately we've had some cases of fraudulence that were brought to our attention through reports.

We've discussing that with the licensees in terms of their oversight of suppliers. The issue we have is that the fraudulence usually occurs with the third tier supplier who's providing bulk material to someone who fabricates a safety component and then sends it to another manufacturer and then it goes to a licensee.

So the latest one we had was like that, and so we're working with the licensees to see what they could do not so much in addition, but maybe complementary to what they do now to ascertain that fraudulence is or is not happening deep into the supply chain.

MEMBER LACROIX: Okay. Thank you for the answer.

Thank you very much.

THE PRESIDENT: Thank you.

Dr. Demeter.

MEMBER DEMETER: Thank you very much.

My question is regarding -- it's page 73 of the Staff CMD, and it regards Darlington. And I'll just quote the section because it's -- for clarification.

It's under their section on worker dose control, so:

"CNSC Staff identified five non-compliances that were relevant to worker dose control, including inadequate planning of radioactive work, improper selection and use of radioactive personnel protective equipment, inadequate protection of contractor work group, failure to provide workers with the accurate radiologic hazard information prior to conducting work, and inadequate contamination control while performing work."

And the reason I read this out is that out of all the nuclear power plants, none of them had any other issues that were like this with regards to worker dose

control.

And on the surface of it, when I read this, it raises concerns in me about radiation safety culture at this site.

So perhaps, you know, CNSC can comment on the -- you know, these are small, little things, but there's a collection of them and, in consolation, it makes me concerned. And maybe Darlington can respond to why they're an outlier in this area.

DR. VIKTOROV: I'd like to start requesting John Burta to provide the overall context, to be followed by, well, more detailed answer from our radiation protection specialist.

MR. BURTA: Hello. John Burta, for the record.

So with respect to the question, you're right. There were some concerns with respect to performance in the area of radiation protection at the Darlington nuclear generating station.

CNSC Staff identified this through our routine surveillance and oversight with respect to compliance activities.

Overall, the corrective actions that were implemented by OPG were satisfactory to staff, and at this time we believe that the program is robust and is in place

to protect worker safety.

And with that, I'll turn things over to my colleagues in the radiation protection division.

MR. ELLASCHUK: Good morning. My name is Bernie Ellaschuk. I'm a radiation protection specialist in the radiation protection division of the CNSC.

I think Mr. Burta has provided a good comment with respect to Darlington's performance with respect to worker dose control.

In order to understand the text in the ROR, I would remind the audience that this is really a follow-up from 2018 Darlington performance.

In 2018, there was a number of events that had happened and, with time, OPG put corrective measures in place. CNSC Staff reviewed those corrective measures with respect to their performance and found it to be improving. That said, through CNSC inspections, we continue to find these low tier events.

In the case of the five examples here, the text is -- perhaps would benefit from a bit further context in terms of the first one, which says inadequate planning of radioactive work.

This was a procedure that was -- CNSC Staff identified where workers were following a procedure that had some minor modifications to it. It should have

been reviewed by the radiation protection staff for agreement with the changes. That hadn't happened.

There was another one with respect to improper selection of personal protective equipment. In this case, workers were wearing particulate respirators, but they should have been wearing a plastic suit. So it wasn't that they were not protected. They just weren't in the right protection.

The other examples are also -- if we go through them, are quite low level significance, but given that in 2018 there had been issues with worker dose performance -- worker dose control performance, we continued to provide additional oversight and scrutiny in this area, so we wanted to draw attention to those events we were finding when we were doing our field walkdowns and inspections of the station.

That being said, if we take a look at Section 2.7 of the report, you'll see that the worker dose -- worker doses for Darlington in 2019, the average dose was just under 2 mSv for workers, and that's all workers, including contractors involved in refurbishment. And the maximum dose is 12 mSv.

Again, that is a dose was received by a worker in refurbishment.

But all of these numbers are well below

the regulatory limit of 50 mSv and are also well below OPG's own internal administrative control levels. And OPG has a number of administrative levels in order to monitor and control -- ensure that they have control over worker doses.

So as much as the report identifies these five elements here, we've drawn the attention to it because of performance from 2018 where it was identified that there was challenges at Darlington. And if you recall, you know, prior to, I think, 2016-2017, their performance had been fully satisfactory in this area.

So when they had the events in 2018 that brought their performance rating down, we continued to provide scrutiny, so the report here is really just reflective of CNSC Staff's continued vigilance on Darlington's performance in terms of worker dose.

And it's not necessarily reflective of poor performance. In fact, it's to the contrary. When we observe their performance over the year, we've identified that they are satisfactory and these low level events, as much as there's five of them identified, none of them are of significant safety concern, so it's actually quite an improvement over the previous year and so it shouldn't be taken out of context as being poor performance. It's just a listing of the five and I think that is reflective of

OPG's continued work to try and improve that area.

I'm not sure if OPG would like to add to that with respect to their performance.

THE PRESIDENT: Yes. I see we do have someone from OPG who'd like to add to it.

So why don't we start with Mr. Bevacqua and then Ms. Duarte after.

MR. BEVACQUA: Thank you, Madam Commissioner. For the record, my name is Val Bevacqua. I'm the Director of Ops and Maintenance for the Darlington nuclear station.

In regards to this question, I would like to state that Ontario Power Generation and Darlington specifically has a very strong culture around radiation protection, but we also have a strong culture of continuous improvement, so we did internalize the comments made and provided to us by our regulators in their inspections and have put in corrective action plans that we deem have been effective in regards to the comments made in the inspections.

With that, I'm going to turn it over to my colleague, Mary Duarte, to provide additional context.

MS. DUARTE: Thank you very much. It's Mary Duarte, Director of Radiation Safety for Ontario Power Generation.

First of all, I'd like to thank the CNSC for their feedback and with regards to these specific areas. I would like to clarify, however, that a number of these points refer to an isolated event that took place during the refurbishment of Unit 2 when our staff misunderstood the work that our vendor partners with doing with regards to installation of feeder panels in the feeder cabinets.

We promptly addressed the situation and we have strengthened the communication with our vendor partners. Additionally, we are using innovation to fully understand the work that's going on in the vault.

I'm happy to say that no regulatory limit was violated and we continue to use these lessons learned to improve the radiation protection program.

Thank you very much.

THE PRESIDENT: Thank you.

Dr. Demeter, did you have any follow-up question to that?

MEMBER DEMETER: Yeah, I'm very thankful that they were low-risk events, but that's the whole purpose of identifying low-risk events, is to prevent high-risk events later on. And when I see a constellation like this of low-risk events I think of the canary in the coal mine and I'm thankful that you're attentive to these

events and that you've got some understanding of their causality and that CNSC is vigilant in oversight.

So I don't want to under-estimate the risk of these because that's why we have action levels because they're low-risk events and I hope that we don't see high worker dose. I'm worried about an acute individual event, so thank you for your attention to this.

THE PRESIDENT: And thank you, Dr. Demeter.

Maybe a follow-question to Staff on this because what I heard you say is given the challenges that Darlington had encountered in 2018, is probably one of the reasons why you're reporting these low-level events, which got me wondering if you'd seen similar five cases at another nuclear facility, would you not have reported that in an ROR?

DR. VIKTOROV: Alex Viktorov, for the record.

I will confirm that, indeed, we have quite low threshold for noticing non-compliances and we certainly do not limit ourselves to safety significant non-compliances. We go quite low.

We do attempt to identify safety significance at the medium, low, even negligible, and we even note compliant findings as appropriate. And it

applies not just to Darlington. We have same expectation for any other site, be it Pickering or Bruce.

And I do believe that we report on non-compliant findings even of low significance as they may have not been as prominent. There may have been less of non-compliances noted in other facilities, but I don't believe Darlington is in any way exceptional in this regard.

And I will ask my colleagues to provide additional information as they see fit.

If anyone from Bruce or Pickering would like to say if they have an observation with regards to radiation protection performance?

MS. KARKOUR: Suzanne Karkour, for the record.

What I would add is I would echo what Dr. Viktorov has stated with respect to reporting in the Regulatory Oversight Report. As I stated in the presentation, the Regulatory Oversight Report covered 1,600 findings in all of the NPPs and the WMS, and those are the compliant findings, the negligible findings, the low findings and the medium findings.

So the -- we did not exceptionally report just on Darlington. I believe the context that Bernie Ellaschuk from the Radiation Protection Division was trying

to provide is that in light of the enhanced oversight at Darlington with respect to radiation protection, because we did above -- more inspections to take a closer look at this particular SCA, we observed -- we made more observations and, as a result, we reported on more findings.

Thank you.

THE PRESIDENT: Thank you.

Anyone else?

Okay. If not, then Dr. Berube.

MEMBER BERUBE: I have a follow-up question with regard to what Dr. Lacroix was talking about, but in this case this is out of the CNSC report, page 36 under component design.

And here you refer to a number of quality control issues with fuel defects and a bundle of vibration issues, which you say were resolved. However, I think it points to a fact that even under ideal conditions, which '19 was, that supply issues happen. And that kind of supply issues because it comes across multiple licensees is something that we have to pay more attention to.

Could you, CNSC, give me an indication of what's going on, especially given COVID-19, what activities are happening at the NPPs in order to, you know, accommodate the need for higher due diligence in supply, you know, across the board in general, but what has been

done.

I know that's more this calendar year than 2019, but given the COVID issues that we're experiencing right now, it's a concern.

DR. VIKTOROV: Alex Viktorov, for the record.

Again, we are reporting on results for 2019 when we operated in full speed, full complement and our programs were not affected. We certainly made the necessary corrections to make sure we deliver expected results this year.

With regards to performance of our systems and components, I would like to start with inviting Patrick Burton from Physicals and Fuel Division to comment on fuel performance, for example.

MR. BURTON: Good afternoon, everyone. My name is Patrick Burton. I'm the Acting Director of the Physics and Fuel Division here at the CNSC.

I can confirm for the Members of the Commission and the public that, as part of NPP design programs, they have programs in place to look very closely at the design and quality of the fuel that they receive.

I believe the question was perhaps more related to design and quality assurance in general, and so I'd like to see whether our colleagues from the Management

System Division have anything to offer on that.

MR. LAHAIE: Pierre Lahaie, for the record.

We do have -- we do very tight oversight on supply management for our licensees. And you -- you made a comment, Commissioner Berube, about, you know, what the licensees done during this period of COVID.

Well, we asked the question of the licensees, obviously, when COVID came into effect, and our licensees assured us they had ascertained the supply chain would not be interrupted in the immediate future.

With respect to the quality of the components, there are standards for safety components that licensees are required to meet, and through our supply chain, supply management inspections, we also can ascertain that the licensees' suppliers are meeting the specifications they put out for any product.

MEMBER BERUBE: So would any of the NPPs like to comment on quality control?

It's something that I'm sure you're very aware, especially given COVID manning and supply issues that are very abundant. What are you experiencing and what are you doing about it?

THE PRESIDENT: Mr. Nouwens?

MR. NOUWENS: Thank you. Jason Nouwens,

for the record.

I just want to give a high-level statement that although COVID provided some challenges for us in 2020 and we had to make many adjustments to our plant operations, we in no way lowered our quality standards. We would not accept a lower standard for our operation. Safety is always number one to us.

And again, we did make adjustments to how we did our work, but we did not lower our standards in any way.

THE PRESIDENT: Thank you.

Any other licensees want to weigh in?

Ms. Tarle...?

MS. TARLE: Thank you.

Emily Tarle, for the record.

In addition to what Mr. Nouwens has said, OPG also has and continues to maintain our robust supply chain surveillance program, particularly around the area of fuel. Through the COVID-19 pandemic we have implemented some different ways of doing things such as some remote observations using cameras and the like to adjust to physical distancing and travel requirements, but I would like to state during the year 2019 we did defuel our reactor at Unit 2 at Darlington and have had very good fuel performance as a result of that. Thank you.

THE PRESIDENT: Thank you.

Dr. Berube, you're good? Okay.

Dr. McKinnon...?

MEMBER MCKINNON: Yes. Thank you.

I have a question for OPG in connection with long-term waste management. You can hear me okay?

THE PRESIDENT: Yes, we can.

MEMBER MCKINNON: Okay, good.

So it was noted in the ROR that early in the year there was a negative vote against the DGR being hosted at the Bruce site and this has clearly affected the timelines for development of a DGR. So my question is, what are the implications for the longer-term storage of low- and intermediate-level waste in terms of the current facility capacity and I suppose particularly the Western Waste Management Facility?

THE PRESIDENT: Ms. Morton, over to you.

MS. MORTON: Yes, thank you.

Lise Morton, for the record.

So with respect to our long-term capacity, the Western Waste Management Facility came in front of the Commission in 2017 for a renewal of our licence and as part of that licence there was an expansion of the site. So we do have significant capacity still available at the site for long-term storage that will last us well into this

licence period and beyond.

But I also do want to point out that we are very focused, as we were before, but we are continuing to increase our focus on waste minimization as well and pursuing a lot of available technologies and methods to further reduce the waste that we have onsite so that we can take full advantage of the current waste storage structures that we have and increase their capacity in fact so that really long term we can mitigate having to significantly expand the site.

If there are additional parts to your question, I am more than willing to answer those as well.

MEMBER MCKINNON: No. So the delay in the construction of the DGR will not cause any issue in terms of waste storage?

MS. MORTON: Lise Morton, for the record.

That is correct. We do have the capacity again for the long-term storage even with the delay, but I do want to point out of course that OPG is certainly continuing to assess what our alternatives are to the DGR. And we know that internationally there are many other methods that could be used, but we are also following with a lot of interest and we will be participating in NRCan's engagement that they have recently announced related to their review of the radioactive waste policy framework.

MEMBER MCKINNON: Okay. Thank you.

THE PRESIDENT: Thank you.

I have a question for New Brunswick Power and it is Table 3 in the staff CMD around number of available certified positions. Point Lepreau kind of sticks out as far as shift supervisor positions, where the minimum required is six and you only have seven, a very small margin. So what are your plans? Are you happy with that situation -- I will ask you first and then staff -- and what are your plans to get more buffer in there?

MR. NOUWENS: Thank you for the question. Jason Nouwens, for the record.

Certainly, our numbers look quite different from multiunit stations, but I do see your point on the amount of margin we have from the required six versus seven we have available.

So before I turn this over to Joel Armstrong, our Station Director, we have been working for several years on a plan for recruitment. As you can imagine and as you know from your experience, developing competent shift supervisors is not a few months, it is a multiyear program. So we have been making efforts in this road.

I will turn it over to Joel to provide some more details on the efforts we have made and the plans

we have in place to increase our numbers of not just shift supervisors but control room operators as well.

THE PRESIDENT: Thank you.

MR. ARMSTRONG: Thank you, Jason.

The station has put significant effort towards recruitment and development of our licensed staff. We have increased our numbers over recent months and at this point we have actually increased the margin from what is recorded in the ROR.

Further, we anticipate to have additional licensed staff available to us at the start of the new year, based on our current status and plans that are in place. So we feel we will have sufficient margin going forward to continue to operate the plant safely with the licensed staff required. Thank you.

THE PRESIDENT: Thank you.

Staff, do you have anything you would like to add?

DR. VIKTOROV: Our Point Lepreau site staff would like to add some additional insights on the question.

MS. DAVIS: Heather Davis, for the record.

CNSC site staff verify the minimum shift complement, which includes certified staff, through our inspections and routine monitoring. In addition to this,

minimum shift complement violations are reported through the REGDOC-3.1.1 and these reports are carefully reviewed by CNSC staff. NB Power has procedures that clearly provide direction on the measures that need to be put in place if certified staff numbers cannot be met. And at this time, based on the inspections, we are not concerned about the number of certified staff and have not seen any issues with minimum shift complement. Thank you.

THE PRESIDENT: Thanks very much for that. Commission Members, any additional questions?

DR. VIKTOROV: We have some additional insights to share --

THE PRESIDENT: Okay.

DR. VIKTOROV: -- from our Personnel Certification Division.

THE PRESIDENT: Go ahead.

MS. DÉSAULNIERS: Okay. Lucie Désaulniers, for the record. I am the Acting Director for the Personnel Certification Division.

Just to complement everything that was said, I just want to add that this is also included in the IIP that is being reviewed and this is where we will follow up on that issue through the IIP.

THE PRESIDENT: Thanks very much for that.

You know, when you talk about the IIP, in the slide deck for Lepreau I don't remember seeing IIP actions. Did I just miss that or was that in the presentation? Maybe, Dr. Viktorov, you can tell me what that slide number was.

DR. VIKTOROV: The Point Lepreau IIP is not yet ready. New Brunswick Power is working on developing such a plan.

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

MEMBER DEMETER: Thank you.

Just a short question for clarification. If I look at the staff CMD, the full CMD 24, on page 42, Table 8, and I look at the breakdown of collective doses for nuclear operating plants, and it breaks it into internal and external and total, I notice that Pickering and Point Lepreau, 20 percent of their total dose is internal, whereas for the Darlington Bruce A and Bruce B it's like 6 percent. So I don't quite understand that difference in why there is such a difference between internal and external dose between Pickering and Point Lepreau versus the risk of the nuclear power plants.

So maybe someone from CNSC staff can -- have they noted this? Is this in keeping with an expectation based on practice or what would explain this?

DR. VIKTOROV: Alex Viktorov, for the

record.

I will turn over this question to our Radiation Protection Specialist.

MS. PURVIS: Good afternoon. It is Caroline Purvis. I am the Director of the Radiation Protection Division, for the record.

So I think to start and at a high level I would say that there are certain licensees where there is more potential for intakes of tritium. It is ambient in their workplace, in particular during outage situations. So you will see differences year on year depending on the outages. But that being said, I think for example Point Lepreau, this has been an area where they have continued to apply corrective actions to bring sort of the internal dose component down relative to the total dose.

I could defer this to Nathalie Gadbois, who is the specialist for the Point Lepreau file, to provide more details.

MS. GADBOIS: Good afternoon. My name is Nathalie Gadbois, I am a Radiation Safety Specialist assigned to the Point Lepreau file.

As Caroline mentioned, due to the nature and the design of the Point Lepreau facility, the tritium is a higher component of the radiological risk than other facilities. Having said that, if you look at the previous

dose that was received for internal collective dose, the dose varied from 13 to 26 percent of the total collective dose. So the percentage of internal dose was the highest in 2019 in comparison to previous years due to the 2019 planned maintenance outage, which resulted in many heavy water systems that were open for maintenance.

Having said that, the increase was expected and although the workers used their personal protective equipment and respiratory protection as prescribed by their procedure, an expected increase is noted mainly due to low chronic doses of tritium received by workers in the reactor building.

Maybe I can also add the fact that they currently have an initiative in place to protect workers at Point Lepreau and at this time we are not concerned with the value that we have in 2019.

MEMBER DEMETER: Thank you. That explains Point Lepreau.

Would the CNSC staff in charge of radiation protection for Pickering be able to suggest a reason why the 2019 value is so high compared to other nuclear power plants in Ontario?

MS. MacDONALD: Hi. This is Sheri MacDonald, for the record, Radiation Protection Division.

My response would be very similar to that

of my colleague Nathalie Gadbois from Point Lepreau. Due to the nature of the facility, the (stream lost / diffusion perdue) dose than at the other facilities, and similar to Point Lepreau, they do put in an initiative to attempt to reduce the dose for tritium. They have many ALARA initiatives in place, such as dryers and other initiatives. They do make a great effort to reduce their external dose, to keep those doses low. As you can see, those doses are on trend with other facilities or lower and they do have protective measures in place for their workers to ensure that they are well protected and we don't necessarily have any concerns in regard to these doses either.

DR. VIKTOROV: I would like to ask Dr. Demeter, if we can supplement even further, then our staff from Pickering Division can add additional ascent, and perhaps OPG can elaborate further.

MEMBER DEMETER: Sure. Yes.

DR. VIKTOROV: Okay.

MS. CAMPBELL: Thank you.

Kim Campbell, for the record.

I just want to note that there are some differences between Point Lepreau and Pickering, and Bruce and Darlington.

Interesting to note that for Pickering Nuclear Generating Station, a lot of work occurs in the

reactor building and this is the biggest contributor to the higher doses that you are seeing in that table.

With regards to Bruce and Darlington, the containment boundary is much smaller, so we need to take that into account when we are comparing sites to sites.

OPG, would you like to add to that? Thank you.

MS. DUARTE: It's Mary Duarte, for the record.

The design of the plant is a factor, as is the outage work that is being performed at Pickering, so it has been a big contributor.

With regards to Darlington, the biggest contributor to the dose is gamma and the biggest proportion of that is associated with the refurbishment of Unit 2. The tritium component to the Darlington dose is relatively small. As I said, the gamma is the biggest contributor. Thank you.

MEMBER DEMETER: Thank you. I'm good with that. That helps explain it.

THE PRESIDENT: Thank you.

One of the things that has not been suggested in any of the responses is that for the Lepreau facility the moderator water in particular -- or the heat transport water does not get detritiated, unlike the Bruce,

Pickering and Darlington sites. How big a contributor is that?

DR. VIKTOROV: Alex Viktorov, for the record.

Indeed, it is recognized as one of the reasons why tritium exposure at Point Lepreau is higher compared to other facilities. Nevertheless, the overall doses received by workers at Point Lepreau are well below the limits and action levels. So overall, CNSC staff is satisfied that workers and their health is adequately protected.

And I wonder if New Brunswick Power Point Lepreau would like to add anything to this.

MR. NOUWENS: Thank you.

Jason Nouwens, for the record.

I just want to echo a lot of the comments that have been made around the design of our facility, the type of maintenance that we perform, particularly outage maintenance where we would, you know, primarily be disassembling systems that contain tritium fluids in them -- or fluids that contain tritium in them, and also just echo the concern raised by President Velshi around tritium concentration of the moderator water. That is definitely a contributor, as Dr. Viktorov has said.

We also -- you know, we do have plans long

range -- and there was a reference made to our IIP prior to this topic, but we do have long-range plans to provide additional mitigation on our moderator tritium by reducing those levels throughout the lifetime of the station. You know, that is many years away, but I want to emphasize that point to be clear that worker protection is very critical to us. We have very strong programs in place now to protect the worker, but we are always looking for ways to be even safer if we can.

THE PRESIDENT: Thank you.

Then let's move on to Dr. Berube.

MEMBER BERUBE: Thank you.

I just have a question as it pertains to basically schedule slippage in terms of refit activity and one of the critical things that we have to mind here is where we are with the HEQ models and testing. CNSC, if you could bring us up to speed, and the current date if possible, on where we are with those models given these new factors.

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

I will assure you that CNSC staff is very much on top of research and development activities related to fuel channel integrity and performance. We dedicate significant effort to this and raise priority over these

activities with the licensees as appropriate.

I don't believe there are significant delays or slippage in the anticipated delivery of -- modify the enhanced models, but I will ask OEAD specialist, Operational Engineering Assessment Group, to provide a specific update on what's happening right now.

MR. CARROLL: For the record, my name is Blair Carroll, Specialist with the Operational Engineering Assessment Division at CNSC.

There hasn't been significant slippage. Understanding that the pandemic did occur, there were some slowdowns in some laboratory work earlier in the year. However, that is back on track. All the laboratories are up and running and functioning normally.

With respect to specific models, I think you would probably be focusing primarily on the development of the updated fracture toughness model. That is scheduled to be issued early in 2021, first quarter, and CNSC staff will conduct the review of that model when it is issued and the intent is to have it implemented by mid-2021 to late 2021.

If you look at the tables that were provided in the ROR, that schedule will certainly have the models in place well before any of the tubes are approaching 120 parts per million hydrogen equivalent

concentration, which is the current focus for that model update.

THE PRESIDENT: Thanks very much.

Dr. McKinnon...?

MEMBER MCKINNON: Yes. Thank you.

I have a question for OPG and it is in connection with how the results of the deterministic and probabilistic safety analyses are used. So in the report it was mentioned, you know, that these results are carried out and also there was a section on severe accident analysis. It was mentioned also that that was used to support severe accident drills, you know, which is a good application. But my question is really that some of the incidents from these analyses could have effect outside of the facility boundaries and so based on these results, are they used to put measures in place for the protection of the environment?

--- Pause

THE PRESIDENT: Who is --

DR. VIKTOROV: I believe this is a question to OPG.

THE PRESIDENT: Yes.

Dr. Vecchiarelli, over to you, please.

DR. VECCHIARELLI: For the record, Jack Vecchiarelli. Thank you for the question.

Deterministic safety analysis and probabilistic safety analysis is used in a variety of different ways. It goes hand-in-hand with the design process and of course supports the safety case for safe operation of facilities.

With respect to severe accidents, as you mentioned, it informs -- it helps to inform the offsite responses, it helps us to develop severe accident management guidelines for beyond design basis events, and severe accident analyses are inputs to the probabilistic safety analysis, from which the real benefit of that exercise is to glean insights, safety insights to further enhance nuclear safety. So there is a wide range of application of both deterministic and probabilistic safety analyses.

I hope that helps to answer your question.

MEMBER MCKINNON: Yes. Thank you very much.

THE PRESIDENT: Thank you.

Dr. Lacroix...?

MEMBER LACROIX: Thank you.

This question is directed either to Bruce or staff and it is with respect to the moderator isotopic purity for all units at Bruce A and B. There seems to be a downward trend and I was wondering what can be done to stop

this trend. And on the other hand, would the licensee be allowed to operate the facilities if this isotopic purity or the concentration of D₂O of the moderator would become lower than that of the general coolant?

DR. VIKTOROV: Alex Viktorov. I will start before Bruce Power will take over and provide specific details.

With regards to isotopic purity for the moderator as well as coolant, there are quite strict limits in place which dictate operating conditions and they are based on results of safety analysis, deterministic safety analysis, as mentioned previously. So no, we don't expect that operation outside of such limits would be permitted. Again, that would lead to safety analysis results being invalidated. That is not allowed.

I will ask Bruce Power to step in and comment on isotopic purity specifically.

MR. BURTON: Maury Burton, Chief Regulatory Officer for Bruce Power, for the record.

As far as the isotopics, they have been slightly below our target, which is currently 99.92 percent, and that does cause us to lose some points in the SPI rating that we do at the CNSC. We have done a lot of work over the past year with our upgraders, which you can only produce so much upgraded water at a certain

pace for this because of the purity that we need. We also have done a lot of work with OPG in terms of getting water from the tritium removal facility and treating our water there, because they give us very high purity water back, which allows us to upgrade the unit. So currently we are essentially in spec in over half the units, but are also working to upgrade these.

As far as safety goes, there really is no safety in location at the moment because we are just slightly out of spec in most units, but from an economic point of view there is a fuel burn charge that we do need to look at from that perspective. We do have targets to get these back into full spec by the end of this year -- sorry, 2021. Yes, 2021.

Does that answer your question, Dr. Lacroix?

MEMBER LACROIX: Yes, indeed. Thank you very much.

THE PRESIDENT: Thank you. Thanks very much for that.

I had more of a comment and maybe a question. Table 7 in staff CMD around maintenance backlogs, I just wanted to commend the licensees for the tremendous progress that has been made in reducing this backlog by 80 to 90 percent over the last two years, but I

wondered if you could just comment on, has the pandemic reversed the trend or is that still progressing through this year?

Maybe I will start with staff. Maybe you can just give us an overall picture, Dr. Viktorov.

DR. VIKTOROV: I will ask staff from the Systems Engineering Division to provide a response to the question.

MR. SIGETICH: Hello. This is Justin Sigetich, I am the Director of the Systems Engineering Division, for the record.

I will pass this question to Yong Chang Lui for more information.

MR. LIU: For the record, my name is Yong Chang Liu, I am the Maintenance Specialist at the Systems Engineering Division.

So based on what we observed so far since the pandemic of those maintenance backlog trending, we didn't notice any, you know, adverse trending data. We are still monitoring those. Either the number being maintained is relatively stable, steady, or some even continuously improve. That's the way it is documented in the ROR report. So from this regard we are kind of satisfied with this overall performance in terms of our managing the total number for maintenance backlog.

I don't know whether the licensee would like to add a bit more from their perspective.

THE PRESIDENT: Bruce Power...?

MR. MUDRICK: Yes. As far as backlogs, we continue on a good trend downward. Our goal this year was an 80 percent reduction. We are on track to meet that by year end, and then we will continue those backlog reductions into the new year.

THE PRESIDENT: Thanks very much.

OPG, Mr. Franke...?

MR. FRANKE: Yes. Jon Franke, Senior VP at Pickering with OPG.

We have continued to move our maintenance backlog numbers down this year and we are achieving our goals. Currently, for example, one category that we focused on this year is DN backlog. In 2019 we were at 109, this year we are at 97. All other categories have continued to move downward. We have continued our maintenance programs through the pandemic.

THE PRESIDENT: Excellent. Thank you.

Mr. Bevacqua, did you have anything to add?

MR. BEVACQUA: Val Bevacqua, for the record, Madam Chairman.

Similar comments as my colleague Mr.

Franke. At Darlington we established targets early in the year for our maintenance backlog. We were not affected by the pandemic. We were able to maintain our performance and will achieve our backlog targets at Darlington this year.

THE PRESIDENT: Thank you.

And New Brunswick Power, Mr. Nouwens, please.

MR. NOUWENS: Thank you.

Jason Nouwens, for the record.

I just wanted to echo a comment I made earlier that we have -- this year has been different for us, we had to make some adjustments in the way we do our work. It looks different than it did in 2019, but we have been able to make the necessary adjustments and continue to work our backlog down, including the requirements for us to move around from the spring to the fall, but we have overall been able to keep our work on track and our equipment reliability strong.

THE PRESIDENT: Thank you. Thanks very much.

And one last comment, staff, for your consideration, is IIP actions. For Pickering you actually showed what was planned and what was actually achieved, not the same for Darlington or Bruce and I think that would be helpful going forward, one, that there is consistency, but

it is good to see how the actual compares to planned,
please.

I don't see any further hands amongst my
colleagues, so that ends all our questions on the
Regulatory Oversight Report. So thanks to the staff, the
intervenors and special thanks to the licensees, both for
the excellent performance in 2019 and for your responses
today.

So we will take a break for lunch and
resume at 10 to 2:00, where we will go over the Darlington
Refurbishment Project update.

So we will see you at 10 to 2:00. Thank
you.

MR. LEBLANC: And for those participating
in this afternoon session, please do not disconnect from
the Zoom session or if you really need to disconnect,
reconnect within 15 or 20 minutes before the restart.
Thank you.

--- Upon recessing at 1:06 p.m. /

Suspension à 13 h 06

--- Upon resuming at 1:50 p.m. /

Reprise à 13 h 50

THE PRESIDENT: Good afternoon, everyone,

and welcome back.

We are ready to move to the next item on our agenda, which is an update on the Darlington Refurbishment Project, as outlined in CMDs 20-M24.1 and 20-M24.1A.

I will turn the floor to Ontario Power Generation for their presentation.

Mr. Gregoris, over to you.

CMD 20-M24.1/20-M24.1A

Oral presentation by Ontario Power Generation

MR. GREGORIS: Okay. Good afternoon, President Velshi, Commissioners and all others joining us for this Commission meeting.

For the record, my name is Steve Gregoris and I am the Senior Vice President for the Darlington Nuclear Generating Station at Ontario Power Generation.

I am joined today by Gary Rose, Deputy Vice President for Nuclear Refurbishment.

On behalf of Gary, myself and OPG, I want to thank you for the opportunity to speak to you today.

I will ask you to move to the next slide, please.

Today, Gary and I will provide an overview

of the Darlington Station and in particular our refurbishment program, including Unit 2 return to service and our ongoing progress on Unit 3. And we will conclude with some thoughts on what OPG is doing to prepare Darlington for the future.

Next slide, please.

First, I will start with a high-level overview of Darlington and highlight some of the more recent successes for the site.

I will ask to go to the next slide.

So Darlington -- for some background, Darlington provides safe, low cost, affordable and clean baseload generation for the Province of Ontario. The last of the four units went into service in the early '90s and Darlington has been operating for 25 years.

There are four units at site, a total megawatt output of just over 3500 MW delivering about 20 percent of the electricity for the Province of Ontario, which is equivalent to about 2 million homes.

I am proud to say that Darlington is recognized internationally for excellent safety performance, equipment reliability -- and I would offer that those two go hand-in-hand, a reliable plant is a safe plant -- and also for its operating performance.

Strong community support is foundational

for us in order to operate in the local community. It directly aligns with our priorities around social licence and putting customers and communities first. Being part of the community is more than simply generating electricity, it is about being an engaged community member and earning trust and confidence in the local communities. As I'm sure you have heard before, we don't just work in the local community, we live here, too.

I am very proud to say that Unit 1 now holds the world record for continuous operation of a nuclear reactor. That again is worldwide, surpassing the previous record of 962 days. But I will tell you that running a nuclear station is not about breaking records, it is all about ensuring that people work safely, they work to the highest standards and they do that consistently day over day. And if that is done consistently day over day and the right work is done for the station to keep it reliable, then you get long runs like you are seeing on Unit 1.

Darlington Unit 2 refurbishment was completed. On June 4th that unit was declared commercially available. And that refurbishment sets a new standard for CANDU refurbishment. Gary will talk a bit more about that, but what I would say from the person who accepted that unit back into operation from the refurbishment project, that

unit is operating very well and reinforces the quality work that was done during the refurbishment of Unit 2.

And just a point on COVID-19. Here at OPG we have implemented extensive measures to protect our workers so that our workers can continue to work safely and ensure that we generate reliable electricity for the province at a time when it is needed most. We have been very successful in doing that and I am very proud of that.

In addition to that, and with the measures that we have in place, we have resumed a number of important projects and work programs, and so not only are we powering the province but we are helping the province re-power the economy.

With that I am going to turn it over to Gary Rose.

MR. ROSE: Thank you, Steve.

You can advance the next couple of slides, please. And one more, please. Thank you.

Good afternoon. For the record, my name is Gary Rose and I am the Deputy Site Vice President for the Nuclear Refurbishment Project.

OPG started planning for the refurbishment on its four reactors in 2007. We recognized the importance of detailed planning in order to execute a project of this size and nature.

In compliance with Regulatory Document 360 on the Life Extension of Nuclear Projects, detailed planning included completion of an environmental assessment, our integrated safety review, a global assessment report, detailed scoping and preparation of the Integrated Implementation Plan which identified all the regulatory scope we would undertake and requirements for returning the units to service.

We also completed engineering and construction work packages for each scope element and then prepared a cost and schedule estimate for refurbishing the four units.

The refurbishment of these four reactors will provide \$89.9 billion of economic value over the life of the asset but, most importantly, will provide 30 years of safe, reliable, low-cost, clean electricity to the citizens of Ontario.

Next slide, please.

The refurbishment of each unit includes the replacement of major reactor components and upgrades to keep plant systems. This includes upgrades to our fuel handling system to defuel the reactor, it includes the removal and replacement of the reactor components, including 480 calandria and pressure tubes, end fittings and 960 feeder pipes.

Additionally, we are upgrading the control system on our turbine generators for Units 3, 1 and 4, as well as rewinding the stators on Units 3 and 4, and performing other TG maintenance.

We will replace the control system on Unit 2 in a separate outage.

On the steam generators we are doing enhanced cleaning and installing access ports for future inspections. We have several balance-of-plant projects, including installation of the auxiliary shutdown cooling system, large valve and pump replacements, electrical upgrades and building retrofits.

Also, while the unit is in the hands of the refurbishment organization, we will also complete all the required unit maintenance.

Included in the scope of the refurbishment are 13 facility and infrastructure projects such as facilities to house project staff, including lunch and change rooms. It also includes the heavy water storage facility which is now in service.

Also, we included in scope and have completed the installation of five safety improvement projects, including the third emergency generator, the containment filtered venting system, the powerhouse steam venting system, the shield tank overpressure protection and

emergency service water to the heat transport system.

Next slide, please.

After years of detailed planning and preparation, Unit 2 finally commenced its refurbishment on October 15, 2016, and Unit 2 was returned to service on June 4, 2020.

OPG deferred the start of Unit 3 due to the COVID-19 pandemic, however, on September 3rd commenced the refurbishment. Unit 3 is forecasted to complete as early as September 2023 and I will provide an update on where we are with that unit in a later slide.

We will commence the refurbishment of Unit 1 in February 2022, a mere 14 months away, and Unit 4 upon the completion of Unit 3. The total duration of the refurbishment of all four reactors is expected to be 120 months, or 10 years.

Next slide, please.

As I already noted, we returned Unit 2 to service on June 4th. We were able to work through the COVID-19 situation without any onsite transmission or issues. We are extremely proud of the performance of the dedicated and professional team in refurbishing Unit 2. This includes station staff and refurbishment project team, support staff from across OPG, our vendor partners, as well as our stakeholder groups, including the support of the

CNSC, TSSA among many other groups.

The team worked over 24 million hours with one lost-time accident due to an individual who tripped and fell, resulting in a broken leg. Our total recordable injury frequency for all years of the Unit 2 refurbishment is 0.44, which is very good, and about 10 times better than the general Ontario construction industry.

Although we are proud of this performance, we're never satisfied with any injuries and will continue to strive for zero injuries and lost-time events.

Also from a radiation protection perspective, we had over 468,000 vault entries during Unit 2, over 200,000 vault entries in 2019. The RP organization issued over 800,000 APDs and stayed within all regulatory limits for dose.

Again, we have had some low safety-significant events. That presents us with the opportunities to improve our performance. We are committed to continuing to do so.

In the refurbishment of Unit 2, we returned 58 systems to service. This required detailed work plans, quality inspection and test plans followed by commissioning and OPG-led return-to-service plans to ensure that we had a system that was operating as designed with the required quality prior to placing it into service.

While we learned many lessons from our first refurbishment and will apply those to subsequent units, we're very satisfied and happy on how we executed the refurbishment of Unit 2. Unit 2, as Steve indicated, has been operating very well since its return to service.

Next slide, please.

This -- and I apologize for the non-technical term -- this picture shows our shiny new reactor, starting on the left and right of the picture with the reactor face, noting the 480 fuel channels installed with the end fittings and closure plugs in view for each. The other pictures are of instrumentation feeders and the fuelling machine columns and bridges. It just gives you an indication of how the vault looked as we turned it back over to the station just prior to June 5th.

Next slide, please.

As part of scoping, and as captured in the integrated implementation plan, we have committed to complete 625 integrated implementation plan tasks or IIP tasks. Fifty-nine per cent, or 369, are complete. This includes all 93 tasks related to removal of the Unit 2 regulatory hold points in order to return Unit 2 to 100 per cent full power.

Regular meetings and annual reports are provided to the CNSC to track and communicate the status of

our IIP tasks. OPG is on track to meet all of its IIP commitments, including 28 IIP tasks related to Unit 3.

Next slide, please.

All regulatory requirements related to returning Unit 2 to service were also met. This includes, as I noted, completion of the IIP tasks and clearing of our four regulatory hold points consistent with requirements of the return to service plan. All regulatory hold points were cleared and removed per the Unit 2 schedule. For each, OPG provided a completion assurance document to the CNSC for review and accepted allowing OPG to clear the hold point.

The hold points included are RHP 1, which was a hold point prior to the first load of fuel, achieved in 2019; and RHP 2, which is prior to the removal of the guarantee shutdown state; RHP 3, prior to exceeding one per cent full power; and RHP 4, prior to raising reactor power beyond 35 per cent all the way towards 100 per cent. RHP 2, 3, and 4 were achieved in April and May of 2020, with the unit being 100 per cent in power on June 4th.

OPG and the CNSC also performed a lessons learned review of these processes following Unit 2 and have incorporated them into the Unit 3 protocol.

Next slide, please.

I'd like to now shift focus to Unit 3. As

I said earlier, we initially delayed the start of the Unit 3 by approximately four months, due to COVID-19. We have implemented controls to allow our workers to safely complete their work.

On September 3rd, we commenced the refurbishment of Unit 3. Over the past few months, we have been on-boarding trades and completing prerequisite field work. We now have over 600 trades on site daily, and are effectively managing safety, including issues related to COVID-19.

We're currently in the lead-in segment and have completed defueling of the reactor and are now installing the containment bulkhead to isolate Unit 3 from the other operating units.

Next slide, please.

Prior to commencing the Unit 3 refurbishment through August, OPG completed a single fuel channel replacement to capture a pressure tube and associated garter springs. These have since been sent to a laboratory for testing and will be used to validate lifespans on Unit 1 and 4.

During this outage, the refurbishment team, collaborating with the station, was able to commence several refurbishment activities, including completing perimetry activities and we started the turbine generator

work, reducing Unit 3 schedule and cost risk.

Next slide, please.

So if you follow, this is an overview of the Unit 3 refurbishment timeline. And if you follow the red line in the centre of this slide, we're now in the lead-in segment, as I said previously, of the project, and we'll transition to the removal segment in early 2021, once bulkhead installation is complete and the Unit 3 containment boundary is established, segregating Unit 3 from the three operating units.

We will then commence the removal stage, where we remove bulkhead fittings, calandrian pressure tubes, and feeder pipes. Once this is complete, we will do vault inspections and move to the installation phase. We will then install new materials and load fuel in early 2023 for a late 2023 return to service.

In parallel to the reactor work, other conventional side pumps, valves, steam generators, turbine generator, and electrical system work will also be done. We will also be doing some work on the reactor side, including adjuster rods and installing the auxiliary shutdown cooling modification.

As was the case for Unit 2, there are four CNSC regulatory hold points, as shown by the four red stop signs to the right of this picture. Although we are in the

early phases of Unit 3, work has been progressing safely on or ahead of plan, which is a good indication that the lessons learned on Unit 2 are improving our performance on Unit 3.

Next slide, please.

Like Unit 2, we have internal restart hold points where we validate our progress prior to moving from one phase to the next. These also align with the four regulatory hold points I spoke about on the previous slide.

Next slide, please.

So capturing lessons learned and continuously improving is one of our nuclear safety culture traits. Within the refurbishment project, we had the opportunity to capture lessons learned from Unit 2 and are applying those to Unit 3, and we'll do the same for Units 1 and 4. It's these lessons learned that help us improve our safety and quality performance, which also translates to cost and schedule certainty. Together, this leads us to successful project outcomes.

Next slide, please.

In this slide, I have identified several areas where we have applied lessons learned from Unit 2 and where we believe these improvements are keys to our success. Within our report, there are details on each of these, but for now, I will just highlight one or two

attributes of each.

Starting with industrial safety, while we've had good safety performance on Unit 2, we are not satisfied. We are continuing to strive for zero injuries and looking at our safety results on Unit 2 in order to proactively assess and resolve issues before they happen on Unit 3. We have set up safety stand-ups prior to each of our major scheduled evolutions on the project where supervisors and trades can discuss the lessons learned from Unit 2 and prevent recurrence on Unit 3.

Radiological Safety. On Unit 2, OPG set some aggressive targets for radiological safety. Considering the fact that we dismantled and reassembled a reactor with over 468,000 vault entries, OPG did a good job of staying on target and not exceeding any regulatory limits.

Notwithstanding, there are a few things that we can do better to further reduce dose to our workers on Unit 3, including use of powered air purifying respirators, or PAPRs, we call them; enhancements to our alpha monitoring program; and optimizing qualification requirements to assist with low-level radiation work.

Construction planning. For Unit 3, we have adopted an optimized shift schedule that will improve project efficiency and manage worker fatigue. The work

project will not be working a 24-by-7 schedule, as we did for Unit 2. In some cases, we will shift from a seven-day-a-week operation to five or six days.

A revised feeder strategy. Our largest schedule challenge on Unit 2 was our feeder program. We had several execution-related challenges that delayed work. We have made improvements to the program, including increasing the level of detail in our plans, adopting the use of new tools, including welding machines and our devices that give the workers mechanical advantage, better management of foreign materials, enhanced training, and changes to improve our welding program.

Tooling. While the major tools on Unit 2 worked well, we have made some enhancements to further optimize them, including, for example, instead of removing calandrian pressure tubes separately from Unit 3, these will be removed together.

Training effectiveness. OPG has leveraged our full-scale mock-up on Unit 2, however, also recognize opportunities to improve its use. We're enhancing the mock-up to replicate station conditions and running full dress rehearsals with all staff, such as quality resources and radiation protection resources, integrated with the teams in training.

One-team model. During Unit 2, OPG

recognized that in some cases, OPG needed to do a better job integrating with the vendors in order to create a high-performance culture. For Unit 3, we have done just that. In a few cases, we have integrated our team with the vendors. However, where independence is required, such as in quality assurance and safety and radiation protection oversight, we have maintained a separation of duties.

And finally, Lean Kaizen. As part of our planning for Unit 3, we took the teams from Unit 2 and leveraged their experiences to identify areas for further improvement within a number of tasks. These sessions created a forum for our workers to improve communication amongst all the work groups executing a task, which leads to improved safety and quality performance in the field. Several additional Kaizen studies are planned and ongoing.

One final note: We are now planning for Units 1 and 4, with Unit 1 scheduled to commence its refurbishment in a mere 14 months. We are actively implementing these lessons learned and many others on Units 3, 1, and 4, and are confident and optimistic that these will improve our collective performance.

I'll now turn it back over to Mr. Gregoris to talk about Darlington for the Future.

MR. GREGORIS: Thanks, Gary.

Steve Gregoris, for the record.

I'll now give a forward look for the Darlington station, and I'll ask if we could move two slides forward, please. Thank you.

"Darlington for the Future." It's our rallying cry and it's our motivation for the station. It includes a 10-year plan that we're driving towards as both a station and as a company. And the vision post-refurbishment, Darling will continue to be a top-performing nuclear station operating to the highest levels of safety, equipment reliability, and operational performance.

To get there, there are four key areas that we're focused on, and you see them in the middle of the page there in each of the boxes.

So, plant reliability: As I said before, a reliable station is a safe station. It's important to realize that refurbishment, while it makes significant improvements in both safety and equipment reliability, it does not touch everything in the plant.

For that reason, it's important that we maintain focus on our online work program, our outage work program, and our capital projects work program. And it's important that we execute all those programs as we move through refurbishment, so that we meet our equipment life cycle management plans and we have the levels of

reliability we're looking for post-refurbishment.

Optimizing pressure tube life: We're looking to operate the Darlington station for 30 years post-refurbishment. And to do that, we will continue to do inspections and we'll continue to validate and further build our models to prove fitness for service for our major components.

Planned outage duration: Our intent here is to reduce outage durations through benchmarking, the use of technology and innovation and resource strategies. And the goal here is to be more efficient at executing our outages while ensuring that we execute all of the outage reliability work that's required.

And lastly, financial performance: Safety and reliability will always be our foundation, but that said, we are a business and recognize that we need to provide electricity to the province at the best cost possible.

Next slide, please.

There are some foundational things that I would like to stress and, in some cases, re-emphasize to the Commission as we move forward with Darlington for the Future. And the first is we're going to remain focused on achieving zero injuries in the workplace while protecting and enhancing both the communities and the environment. As

we progress Unit 3 refurbishment, we will continue to learn and apply these learning to both Units 1 and 4. And this will allow us to execute our refurbishments safely, with quality, as well as on time and on budget.

We will not lose sight of other important work programs to ensure the high levels of reliability we're looking for going forward.

We will implement the ability to produce life-saving isotopes, in particular molybdenum-99 and cobalt-60 for the medical industry.

We will continue to build and grow long-term, mutually beneficial working relationships with Indigenous communities near current and future operations.

We will help lead the province and the country in meeting its goal of net zero carbon emissions by 2050.

And we will continue to embrace diversity in the workplace. To operate a station to the highest levels of performance, we must have equity, diversity, and inclusion.

On behalf of OPG, I would like to thank you for providing us the opportunity once again to appear before the Commission, and we look forward to answering any questions you may have.

THE PRESIDENT: Thank you, Mr. Gregoris

and Mr. Rose, for your presentation.

I will now ask staff for their presentation, the second part of their presentation that focused on the Darlington refurbishment project, outlined in CMD 20-M24.A, starting at slide 48. And I'll turn to Mr. Burta for the presentation.

CMD 20-M24/20-M24.A

Oral presentation by CNSC staff (Cont'd)

MR. BURTA: Good afternoon, President Velshi and Members of the Commission.

I'm just waiting for the presentation to be displayed.

MR. LEBLANC: It is on it's way. Thank you.

Please start with the intro, Mr. Burta. It will come in within the next few seconds. Thank you.

MR. BURTA: Thank you for that.

Good afternoon, President Velshi and Members of the Commission. My name is John Burta, and I am the director of the Darlington Regulatory Program Division.

I am joined here today by Mr. Camillo Loreti, who is the project lead for the Darlington Refurbishment Project and most recently managed the return

to service of Unit 2. I am also joined by Andrew Mathai, lead inspector overseeing the refurbishment activities at Darlington, and other members of the CNSC Darlington Refurbishment Team.

Next slide.

This presentation will provide an update on the status of the Darlington Refurbishment Project by presenting an overview of the regulatory oversight activities conducted thus far, focusing on the return to service of Unit 2, which underwent a three-and-a-half-year refurbishment outage and recently resumed commercial operation in June of 2020. The presentation will also provide a look ahead to future units. This comprehensive status update was requested by the Commission in the 2015 Darlington relicensing record of proceedings.

The main objectives of the CNSC's regulatory oversight during refurbishment are to confirm that the integrated implementation plan, or IIP, commitments are being implemented as approved by the Commission; refurbishment activities are conducted safely and in compliance with regulatory requirements; the plant and its personnel are ready for return to service following refurbishment; and that all pre-requisites required for the removal of regulatory hold points, or RHPs, were met. This includes completion of unit-specific IIP items.

OPG began planning and conducting feasibility studies for Darlington refurbishment in 2007 and 2008.

As mentioned in the regulatory oversight report presentation, in 2015, the Commission renewed the Darlington operating licence for a period of 10 years. With the current licence, the Commission authorized OPG to undertake the refurbishment of all four Darlington units and required OPG to implement the improvements identified in the Darlington IIP.

At the time of licence renewal, the Commission delegated the authority to remove regulatory hold points for the return to service of each unit undergoing refurbishment to the executive vice-president and chief regulatory operations officer of the CNSC.

The first Darlington unit to enter its refurbishment outage was Unit 2. This occurred on October 14, 2016. Following a successful refurbishment, Unit 2 was recently returned to service and resumed commercial operation on June 4th, 2020.

On September 3rd, 2020, OPG proceeded with the refurbishment of Unit 3.

CNSC's regulatory requirements and expectations for refurbishment of Darlington units are contained in CNSC regulatory document RD-360, *Life*

Extension of Nuclear Power Plants. As described in RD-360, once a licensee decides to undertake a refurbishment project, the licensee systematically identifies and addresses all environmental, safety, and regulatory aspects associated with a life extension and integrates them into an integrated implementation plan.

To do this, the licensee participates in the environmental assessment process; carries out an integrated safety review, or ISR; and incorporates the results of these assessments into a global assessment report, or GAR, and an integrated implementation plan, IIP.

RD-360 also provides regulatory expectations for refurbishment project execution and returning a reactor back to commercial operation post-refurbishment.

CNSC staff provided regulatory oversight from the early stages of planning, including in the preparation of the EA, the ISR, and the GAR, and culminating in staff's acceptance and the Commission approval of the IIP.

In order to provide assurance that the return to service activities are performed in a manner that does not compromise safety, following the 2015 relicensing hearing, Darlington's power reactor operating licence included three conditions that must be satisfied during the

refurbishment project.

Licence Condition 15.2 provides assurance that all prerequisites and restart activities have been identified, properly planned and executed.

The licensee's return to service plan describes the processes, procedures and organization that will be used during the refurbishment of Darlington Units to manage the project including re-start activities.

Licence Condition 15.3 requires OPG to complete the improvements identified in the IIP.

The IIP contains commitments, including the time frames for implementation resulting from the refurbishment, environmental assessment, as well as the Darlington Integrated Safety Review.

Finally, Licence Condition 15.4 states that OPG must obtain approval from the Executive Vice-president and Chief Regulatory Operations Officer to remove the established regulatory hold points.

As per Licence Condition 15.4, four regulatory hold points were established for which CNSC approval must be sought prior to proceeding to the subsequent commissioning phase. These RHPs are documented in the Darlington *Licence Condition Handbook*, or LCH.

The four established hold points are consistent with the return to service and commissioning

activities described in RD360.

At a high-level Hold Point 1 focusses on ensuring that those systems required to ensure safety with fuel loaded into the reactor have been adequately commissioned. This phase must be successfully completed prior to loading fuel in the reactor.

Hold Point 2 focusses on ensuring the fuel is loaded into the reactor safely and confirming that the reactor is in a suitable condition to be started up, and that all pre-requisites for permitting the reactor to go critical have been met. This phase must be successfully completed prior to removal of the guaranteed shutdown state.

Hold Point 3 focusses on confirming reactor behaviour at the stage of initial criticality and subsequent low-power tests and includes activities that cannot be done during the GSS, or guaranteed shutdown state.

And, Hold Point 4 focusses on demonstrating reactor insistence behaviour at higher power levels including activities that could not be carried out at power levels below 35 percent.

These hold points require regulatory verification to confirm operational readiness of people, programs, and the plant systems to satisfy regulatory

requirements for staged progression through the commissioning phases up to full-power operation.

Compliance verification criteria including the pre-requisites for the removal of each regulatory hold point are included in the LCH.

Taken from the LCH, these are the pre-requisites that the licensee must meet in order for the CNSC to provide consent to remove each hold point. These will be discussed further in subsequent slides.

For the removal of each regulatory hold point OPG is required to demonstrate that the people and the plant are ready for return to service by demonstrating that an adequate number of trained and qualified staff are available. All training required has been delivered to safely execute the planned activities and start-up of the unit. Procedures have been prepared and reviewed and they have been validated. And that system structures and components required for the removal of each regulatory hold point are confirmed to be available for service through commissioning and testing.

At this point I will ask that Andrew Mathai, lead inspector overseeing the refurbishment activities present a few slides on IIP in completion verification.

MR. MATHAI: Thank you, Mr. Burta. Good

day, Madam President and Members of the Commission.

As previously stated, one of the refurbishment oversight objectives is to monitor implementation of the IIP. The Darlington Integrated Implementation Plan consists of 625 commitments that encompass all four reactor units at Darlington and extends to 2028, as shown on this slide.

For the return to service of Unit 2, 93 of the 625 IIP commitments had to be completed prior to the removal of the final hold point as described in the Unit 2 return to service protocol.

CNSC staff actively monitored and verified completion of each IIP item and overall staff are satisfied with OPG's implementation of the IIP.

As part of the 625 commitments in the IIP for Unit 2, OPG has replaced the pressure tubes, calandria tubes, feeders and fittings. And has installed the auxiliary shutdown cooling pumps which are physically separate and of diverse design than the shutdown cooling pumps.

The following major safety improvement opportunity stemming from the EA have also been completed:

Shield tank over-pressure modifications in all four units;

Containment filtered venting system;

A third emergency power generator;
Powerhouse steam venting system
reliability upgrade in all four units;

And, an emergency service water line to the heat transport system of Unit 2. This specific modification will be installed in the other units during their upcoming refurbishments.

To guide compliance verification during refurbishment, in 2016 CNSC staff developed the Darlington Refurbishment Project Type II Compliance Plan. This was based on the generic Refurbishment Regulatory Oversight Project Plan. CNSC staff actively monitored and conducted compliance verification inspections throughout all phases of refurbishment, including:

The Lead-in phase, which includes preparation activities for refurbishment.

The Component Removal phase, which includes removal of reactor core components.

The Installation phase, which covers the installation of reactor core components.

And the Lead-out phase, this includes fuel load, system, structures and components commissioning, and start-up of the unit.

These compliance activities associated with Unit 2 consisted of Type II inspections and field

inspections, and these activities verified compliance with the Power Reactor Operating License, Nuclear Safety and Control Act, and all other applicable regulatory requirements covering all Safety and Control Areas.

The Darlington Refurbishment Project Type II Compliance Plan reflected OPG's implementation schedule and activities during the corresponding phases of refurbishment. The plan was modified to correspond with any changes to OPG's refurbishment schedule.

As well, additional inspections were also added in response to emergent refurbishment issues of regulatory interest. To date CNSC staff have completed 31 Type II Inspections and 35 field inspections focused on Unit 2 refurbishment.

CNSC staff have completed the entirety of Darlington Refurbishment Project Type II Compliance Plan as planned, with one Type II inspection remaining to be conducted during the 2020-2021 fiscal year. The remaining type II inspection is tied to the post-refurbishment and verifies OPG's configuration management for Unit 2.

Based on the scope of inspections conducted, CNSC staff concluded that the licensee was in compliance with the regulatory requirements.

No medium or high findings were identified in the inspections conducted for refurbishment.

OPG provided acceptable corrective action plans for all non-compliances that resulted from the Unit 2 CNSC compliance activities.

And, OPG has implemented all of the corrective action plans to staff's satisfaction and as a result, all non-compliances observed during the refurbishment of Unit 2 have now been addressed.

Overall, CNSC staff confirmed that the refurbishment and return to service activities were performed safely and in compliance with regulatory requirements.

I will now turn things back over to Mr. Loreti, who will continue with the presentation.

Thank you.

MR. LORETI: Thank you, Mr. Mathai.

Similarly, to the compliance plan, to aid in our regulatory oversight of Unit 2's return to service, and to ensure that this could be managed by both the licensee and the regulator, an administrative protocol was established between the two organizations. This working level document clarified requirements, specified deliverables, and documented CNSC staff's expectations for the refurbishment of Unit 2 and its return to service activities.

The protocol was also used to monitor

progress of these activities including completion of deliverables and commitments.

In order to support a timely return to service of Unit 2, the protocol also documented the mechanism for removal of the RHPs.

For each RHP the process involved the submission of two revisions of the Completion Assurance Document or CAD;

The production of a staff report to the EVP-CROO or Executive Vice-President and Chief Regulatory Operations Officer;

A final recommendation to the EVP-CROO regarding status of pre-requisites and the hold point itself, and ultimately;

And, ultimately, removal of the RHP by way of a formal letter from the EVP-CROO.

In accordance with requirements, as OPG neared completion of each commissioning phase, completion assurance documents were submitted to staff. The first revision of the CADs were summary documents demonstrating that all pre-requisites, as well as all commissioning, testing and restart activities required for a given hold point were being met.

At this point, as work was still being conducted, the first revision of the CAD contained several

open items. CNSC staff's review of the first revision of CAD and the associated verification activities, formed the basis of staff's report, updating the EVP-CROO on the status of pre-requisites for each hold point. This report was provided seven business prior to the anticipated RHP date.

As work continued and open items were being closed, OPG was requested to formally ask for removal of the hold point and to submit another revision of the CAD, this time two days prior to the anticipated RHP date. This second revision of the CAD provided an update on the status of the pre-requisites and the remaining open items which were tracked and verified complete by staff.

Following these final verifications and confirmation that all remaining open items had been closed, CNSC staff provided a recommendation to the EVP-CROO regarding removal of the RHP.

OPG's CAD documents and CSNC staff's verification activities and assessments confirmed that all 93 IIP commitments associated to the return to service of Unit 2 were completed ahead of their given RHPs.

System available for service packages and summary test reports demonstrated and provided assurance that systems, structures and components required for the removal of each RHP could be credited to safely and

reliably perform their design functions for continued unit operation during return to service and following refurbishment.

The individual and aggregate modifications installed during the Unit 2 refurbishment do not affect the present Darlington minimum shift complement.

All procedures specified for removal of the RHPs underwent sufficient validation to ensure safe operation during the return to service of Unit 2.

Return to service specific training had been developed and delivered in accordance with the processes and procedures that constitute OPG's training program.

Specific structures, systems and components met the quality and completion requirements of CSA standard N286, and non-conformances and open items were addressed.

While the previous slide discusses the pre-requisites that OPG did meet, the last pre-requisite was incumbent on staff. CNSC staff completed their verification that that all construction, commissioning, re-start, and available for service activities required prior to removal of each RHP had been successfully completed, as required by the last pre-requisite.

CNSC staff's verification activities

associated to this pre-requisite are documented in the detailed reports referenced on this slide. These documents form the basis for the recommendation to the EVP-CROO to provide his consent to remove each RHP.

To recap, for each RHP, a CNSC staff report to the EVP-CROO was provided seven working days prior to OPG's scheduled hold point removal date. This report was based on the initial CAD submission and work that had been completed to that point. A subsequent revision of the CAD was then submitted along with a formal request to remove the hold point.

Following confirmation and verifications that all remaining open items had been closed, CNSC staff provided the EVP-CROO final confirmation and a recommendation to provide regulatory consent to remove each hold point.

The recommendations were based on:

Compliance assessments;

Desktop Reviews;

Surveillance and verification activities;

and,

Inspections.

Once all pre-requisites and regulatory commitments were shown to be met, the EVP-CROO issued a letter to OPG providing regulatory consent to remove the

RHP.

A Record of Consent including Reasons for Decision for the removal of each RHP was also produced to document the EVP-CROO's decision.

The final RHP was removed on May 13, 2020, allowing OPG to progress toward commercial operation which was achieved on June 4th, 2020.

Oversight of the Darlington Refurbishment Project is being led by the Darlington Regulatory Program Division, with participation from both Headquarters and site office staff.

Activities have been tirelessly supported by virtually every directorate and division within the Technical Services Branch, as well as other divisions within the Regulatory Operations Branch.

From fiscal year 2016-17 to September 2020, CNSC staff have expended approximately 6435 person days for the oversight of the Darlington Refurbishment Project. Reviews and compliance activities have been planned and conducted using a two-key approach. And documentation related to the removal of hold points underwent multiple reviews across various management levels to ensure that an appropriate level of scrutiny and rigor was applied.

In order to ensure progress of the entire

refurbishment project, which includes the three other units at Darlington, OPG proceeded with Unit 3 planning and pre-refurbishment outage work in 2019, with CNSC working closely to provide regulatory oversight where needed.

Breaker open on Unit 3 occurred on July 31, 2020, for a single fuel channel replacement. This work paved the way for OPG to begin defueling the remainder of the Unit 3 core on Sept 3, 2020, as it entered its refurbishment outage.

Defueling of the reactor core was completed on November 25, 2020 and bulk draining of the heat transport system began shortly thereafter.

Following the heat transport inventory draining activities, a bulkhead will be installed to isolate Unit 3 from the rest of the operating units, allowing for subsequent refurbishment activities to be safely conducted.

CNSC staff have been engaged in the planning of Unit 3's refurbishment and have an approved project plan for the regulatory oversight of the unit.

The project plan serves as a comprehensive regulatory activity plan that integrates the processes, resources, planning of key activities, and schedule to meet the refurbishment project requirements.

A new protocol has been established

between the CNSC and OPG to clarify requirements for return to service of Unit 3 and the removal of RHPs, incorporating lessons learned and operational experience from the oversight of Unit 2.

Similarly, based on feedback from both Technical Service Branch and Regulatory Operations Branch, CNSC staff have implemented lessons learned and OPEX in developing the Unit 3 compliance plan.

This slide illustrates the overall refurbishment schedule for Darlington, including Unit 2 and the overlapping of Unit 3 & 1 and Unit 1 & 4. Currently, OPG do not anticipate the need to overlap more than two units at a time.

Despite this busy schedule, CNSC will continue to ensure that an able and adaptable refurbishment oversight team is in a place and is equipped with appropriate oversight planning and executions tools, including unit specific project plans, return to service protocols, and compliance plans.

Lessons learned will continue to be incorporated to improve in planning return to service and compliance verification activities during the future refurbishment of Units 3, 1 and 4, as shown on this slide.

With this, Mr. Burta will now provide some closing remarks.

MR. BURTA: Thank you, Mr. Loreti.

In closing, the Darlington Refurbishment Project is being executed safely, and in accordance with regulatory requirements.

All pre-requisites required for the removal of the established regulatory hold points in the return to service of Unit 2 were successfully completed, as documented in CNSC staff report and in the four issued Records of Consent.

CNSC staff have well-established experience, tools and processes for regulatory oversight of refurbishment projects in Canada. This was most recently demonstrated in the safe and successful return to service of Unit 2.

Lessons learned and OPEX from Unit 2 have been incorporated in the tools and processes already in place for subsequent units and will continue to be considered going forward. CNSC staff are confident that OPG will also leverage the lessons learned from previous units and that subsequent refurbishments at Darlington will continue to be conducted safely and in accordance with regulatory requirements.

And finally, staff will continue to update the Commission on the status of refurbishment activities through our regular NPP Status Update and future regulatory

oversight reports.

This concludes the presentation. CNSC staff are available to answer any questions that the Commission may have.

THE PRESIDENT: Thank you for the presentation, CNSC staff. And let's open it up for questions starting with Dr. Demeter, please.

DR. DEMETER: Thank you very much for your presentation; that puts it in a bit of perspective.

So I was really pleased to see that there was a section on lessons learned from the OPEX and the future Units 3, 1 and 4.

I wanted to ask two questions, and those are all lessons learned for future refurbishment activities. Now, given the amount of time that the regulator would put into this process, are there lessons learned from a regulatory point of view about how we're going to approach regulating subsequent refurbishment projects here, if there's a large project, so that we have an equivalent lessons learned from CNSC as the regulator? And, also from the -- from OPG's point of view, can we more broadly apply from the lessons learned to operating -- there's some lessons learned for operating nuclear power plants that aren't necessarily going refurbishment but that you might have gotten from insight into operations, as

well? So, as far as CNSC staff, were there lessons learned for the regulator?

MR. BURTA: John Burta, for the record. So, yes, absolutely, there were lessons learned and some of these lessons learned were focussed on our administrative procedures for how we were recording, documenting and reporting on work. We found some efficiencies that we were able to incorporate with respect to inspection planning. We've identified some areas that may be overlapping with the oversight of the operating units that maybe we could leverage some efficiencies there by adapting the scope of some activities to include both elements of refurbishment and operating plants.

But, with respect to the lessons learned captured in the refurbishment project, I'll direct the question to Mr. Loreti to see if he has anything else that he would like add.

MR. LORETI: If I were to add anything, it may be some of the refinements to the Darlington Unit 3 protocol, for example, return to service protocol that we're in the process of implementing, so we've added some witness points to the protocol that CNSC staff witnessed for Unit 2 and are interested in witnessing going forward. But, also, some refinements to the timelines associated to the submission of certain documents, in particular the CAD

documents. That's getting pretty specific, though.

I think, Mr. Burta's response captures the overall -- that we're looking at implementing.

THE PRESIDENT: And Mr. Rose, for OPG.

MR. ROSE: Yes, thank you for the question.

We -- starting off with the relationship, with the lessons learned from a regulatory perspective OPG's regulatory interface team did a lessons learned and did a jointly lessons learned with the CNSC staff as well, and you know, the biggest lesson learned I probably took out of this is how effective the process did work. I think the communication levels amongst both parties was -- was very good and we seemed to get some very good, positive feedback from that, notwithstanding there are opportunities for -- for improvements going forward that have been built in the protocol, we had some evolutions of our schedules and changes in our schedule and the level of communication that we need when the schedule moves around on us is -- is probably one area that we can also contribute and help to the effectiveness of the regulatory program as well.

With respect to lessons learned from -- from the station, from an operations perspective, and I'll let Steve add to this one, as well, I think it's a very good -- a good question. We've tended to capture our

lessons learned for the refurbishment project. We have assertively been sharing those with Bruce Power, as well, on a recurring basis.

But I believe there are many lessons learned that we're also applying to operating stations.

Our RP organization, for example -- the RP organization is supporting the refurbishment as well as the operating station, so a lot of the lessons learned, the tools that they've put in place are being applied to the operations unit.

I'll turn it over to you, Steve, to add to that?

MR. GREGORIS: Thanks, Gary.

So a couple of comments. The first comment, I just wanted to go back to a comment made by CNSC Staff around the regulatory hold points and opportunities for regulatory hold points.

I would just offer that that was certainly a busy time for everyone, and I did want to extend on behalf of OPG thanks to the CNSC for their timely execution of their regulatory duties during the return to service. But I do think, looking at that part of the process to see where we can be more efficient and to reduce -- it will always be high levels of effort, but to reduce the effort where possible is an opportunity for us and I know we're

going to do that going forward.

As far as lessons from the station across with the refurbishment project, I think the -- there are a number of opportunities that lie both in the organization and some of the transitions between operations and refurbishment project and back, so with regards to the organization, we've already made changes to make us more efficient and to bring the two organizations together as one.

The example I would give right now is engineering. There was two distinct engineering organizations at the -- as we went through Unit 2 and as we moved into Unit 3. We have, in many parts of engineering, combined the efforts, and a lot of that's come under the engineering director at Darlington. But a number of people, including that engineering director at Darlington, were very involved in Unit 2 and so we'll have a more efficient organization that looks broadly at both the project and the balance of the station.

As far as transitions, there were a number of opportunities, I think, to be more efficient in the transition, but also to ensure as we make transitions, so when the unit was moving from the construction phase back to operations to move towards start-up, there were a few opportunities to improve just how we step through that, for

instance, access control and the use of access control of their airlocks. You would expect during the construction phase, those airlocks are open, there's no hazards and people are going in and out. We have to transition back to a very strict program of access control as we move towards loading fuel and moving towards start-up.

And so how we make the transition, what that looks like, there was opportunities there that we've taken into our corrective action program and we have actions in place to improve for Unit 3.

MEMBER DEMETER: I'm grateful to see that there's sort of an organic process to learn from this and progress as such. Thank you.

THE PRESIDENT: And maybe I can ask a further question to that.

The interface between OPG and the CNSC, you spoke about lessons learned there, but what about some more fundamental things around requirements and oversight as have been documented in RD360?

Did the two parts look at that and see, you know, now that we've got this experience under our belt that we need to revisit any of that?

Maybe I'll start with staff first.

MR. LORETI: Sorry. I'm not sure -- if you could repeat the question, Madam Velshi. I apologize.

THE PRESIDENT: So we heard about lessons learned, and when it comes to the licensee and the CNSC, it seemed very much around the interface, around protocols.

I wondered if there were more fundamental lessons learned that would impact the Regulatory Document and our requirements in there that came out as a result of the Darlington Unit 2 refurbishment experience.

MR. LORETI: I'm not sure if there's any fundamental lessons learned that were -- that are looking at being applied. I think the requirements were fairly well established. They were established in the record of decision in 2015 and subsequently in the LCH and refined in the protocol.

There may be small refinements to that, but overall, I think, in general, things worked well in that regard.

THE PRESIDENT: I see we've got a few hands up. We'll start with Dr. Vecchiarelli and then Mr. Jammal.

DR. VECCHIARELLI: For the record, Jack Vecchiarelli. I'm Vice-President of Nuclear Regulatory Affairs and Stakeholder Relations at OPG.

Just at a very high level, I think, you know, the experience has highlighted the importance of communication, clear communication. And also, we talked

about the level of effort expended on both sides. This is a massive undertaking.

You know, I think it's very important, and one of the lessons we extracted here is that we have the right information that is absolutely required to be exchanged between the licensee and the regulator.

Sometimes there could be extraneous information that perhaps could be better left programmatically and not have to necessarily tie up resources on both sides, and so those are some high-level thoughts. And I think we can bring those forward into other projects where there are protocols that are becoming very common now outside of a refurbishment, so the Moly-99, cobalt-60 initiatives, et cetera. We're carrying those forward, those lessons learned, into other protocols within OPG and the CNSC.

Thank you.

THE PRESIDENT: Thank you.

Mr. Jammal?

MR. JAMMAL: Thank you, Madam Velshi.

It's -- the lessons learned, I'll start with the foundation first from regulatory perspective. No major amendments to take place. Everything is totally minor, so the RD360 is still valid.

The positive end of things is the

requirements established by the Commission which bounded our decision to remove the hold point were very, very clear. The expectation of the licensee were made very, very clear.

It's one lessons learned, Dr. Demeter, with respect to our overview was during the pandemic. When we started to look at this process, the rigor applied by myself, I'm pretty sure Camillo will say I was probably too -- John is smiling, but yes, we had drove staff to provide information. It's not because it's deficient. It's the clarity that is expected of me and the Commission and the public so it is on the record.

And the key point here is for the future. The knowledge management was key. That's why I pushed hard with respect to what information is required so it becomes the foundation for the CNSC, the public and for OPG.

But during COVID, we had to be agile. Many of our support group and our technical support staff did not have the direct access our inspectors did, so we had to work with the IT in the organization in order to provide them priority for access for information.

So many challenges were put in and took place, and we took that into consideration.

On the regulatory principles and foundation, we've had experience from NB Power. We had the

experience from Bruce Power, so we incorporated all these together.

And my colleagues in DPRR and the whole organization, the project plan were established, as was mentioned, years before from inspection planning to the variability. And communication with the licensee, one success I would say, the licensee at times tried to deviate -- I shouldn't say outside the safety case, but to look at things that were not -- potentially will cause a delay, that's where the discussion would take place with Staff so that we brought everything back to then the approval of the safety case as established by the Commission.

THE PRESIDENT: Thank you, Mr. Jammal.
Dr. McKinnon.

MEMBER MCKINNON: Yes. Thank you very much.

I have a question for OPG, and it's in connection with the scheduling of the future shutdowns.

The schedule shows that there's a time when both 1, 3 and 4 will be offline for refurbishment, so my questions are, what would happen if there's an outage on Unit 2 and the impact on power delivery. And is there a reason that Unit 4 refurbishment cannot be delayed to prevent three units being down at once, you know, which

would add a little bit of safety margin to power delivery?

THE PRESIDENT: Mr. Rose.

MR. ROSE: Good afternoon again. Gary Rose, for the record.

So that is -- that is a visual that shows an overlap of three units, but we would never actually have three units in a refurbishment state at any point in time. We would only ever have two.

Unit 4 -- the reason why there was an overlap, Unit 4 will start once Unit 3 is complete, not one day before. And the fact of the matter is that we show Unit 4 starting at the early date and we show Unit 3 ending at the late date. That overlap period is really dependent on how we actually -- the schedule that we actually deliver to, but they will not -- there will not be three units overlapped at any point in time.

MEMBER MCKINNON: Okay, that's reassuring. Thank you.

THE PRESIDENT: And Mr. Rose, I know your slide actually has a footnote saying that. The staff slide does not.

And you know, visually, it raises exactly the kind of question that Dr. McKinnon has raised, and I think one may just need to be extra careful. I know that that's a crunch time for the province, end of 2023, and

this just seems to reinforce that -- the slides don't help, is all I'm saying.

Thank you.

Dr. Lacroix.

MEMBER LACROIX: Well, first of all, thank you very much for your presentation, OPG as well as staff.

This is a question for OPG. Well, first of all, I would like to congratulate you for the successful completion of the refurbishment of Unit No. 2. Having said that, I'm sure that despite the careful planning of the refurbishment of Unit 2, you had to face unforeseen events and safety issues.

And I would like to know this time what were your failures in the sense that when you had to face these industrial and radiological safety issues, how did you cope with it and how will you, this time, anticipate these issues, probably -- probably not, I don't know -- but how will you overcome these issues?

The first time it was unforeseen, and now it might be anticipated. So from the lessons learned, how will you transpose the knowledge and the knowhow that you have developed to face these challenges for the refurbishment of Unit No. 3?

THE PRESIDENT: Mr. Rose.

MR. ROSE: Thank you, Dr. Lacroix. Very

good question.

Obviously, during Unit 2 we -- in planning, we were as proactive as we possibly could be to do risk assessments and understand where safety events could potentially occur, whether they be conventional or radiological. And you know, as we reported here, we had some radiological events in 2018 that we learned from and improved our performance beyond that.

And we've had -- although our performance is good, we've had conventional issues throughout, whether it be dropped objects or trips and falls, musculoskeletal type injuries, et cetera.

So what we did going forward for Unit 3 and we'll do for 1 and 4 as well is we actually went through and reviewed all of our safety events, our radiological events and human performance events and we mapped them to our Level 3 schedule.

So if you look -- so -- and we mapped them all to when they happen on Unit 2 and when would they likely occur again on Unit 3.

And we have a schedule that's developed that actually has a bunch of stop signs throughout it. There's probably 30 or more stop signs. And what those represent are points where we will actually do a safety stand-up before we commence work.

And the purpose of that stand-up is for OPG trades supervisors, trades themselves to stop and have a discussion about what the events were on Unit 2 that have -- all of them would have already been incorporated into the project plans, run through on training, but to stop and make sure everyone is aware of the potential hazards that are in front of them and ensure that we are doing all of the required things to prevent recurrence of those hazards.

So we call them proactive safety stand-ups versus reactive safety stand-downs, and like I said, we've incorporated radiological events, human performance events, conventional safety events, lessons -- key lessons learned that are important for those series, and that's how we were approaching it.

MEMBER LACROIX: Quite interesting. Thank you.

THE PRESIDENT: Mr. Gregoris.

MR. GREGORIS: Thank you. Steve Gregoris, for the record.

I just wanted to add to what Gary said, but to your point, Dr. Lacroix, some things we can learn from based on what we saw, but we also need to be able to respond better to new things that we will encounter in subsequent refurbishments.

And one of the things that I -- that stands out to me during Unit 2 return to service -- and for perspective, the return to service of Unit 2 with the amount of commissioning -- testing, sorry, activities that we did in start-up was between 60 and 90 days, you know, with some contingency obviously between the 60 and the 90.

So significantly longer than a normal start-up, which average is of seven days.

So in that, I'll say, start-up, which was certainly, you know, out of the ordinary, and with COVID-19 as something that we had to manage as part of the start-up, we actually stepped back and took a look at how do we, in this environment, make sure that we have the right oversight in place and the right, I'll say, pre-determined teams in place that could respond to items that came up and a communication protocol to launch those teams, address those issues and allow us to continue forward in a safe and effective manner.

And I think what we learned during the Unit 2 return to service we'll emulate for further units just because it gives us the structure and, really, we've learned how to respond to not only we'll see again, but what else we will see.

THE PRESIDENT: Can I ask a question on your trades -- and I know this is kind of early days for

Unit 3, but have most of them -- were they there for Unit 2 or do you think they'll be a totally new group of folks coming in for the different units?

MR. ROSE: It's Gary Rose, for the record.

Many of our trades are the same trades that we had on Unit 2, and you're right, it is early days. We've got about 600, 650 trades on per day.

The last time we looked at this, about 80 percent of those trades were here for Unit 2.

The other thing that we did is when we delayed the start of Unit 3 due to COVID, we bridged some of the critical, the key trades, the general foremen, the key trades from Unit 2, and we had those folks spend some time going back and re-looking at those plans and making sure those plans were topnotch and ready.

Those were our leaders. Those were our best of Unit 2. We did not want to lose those. Those folks are still here with us. And as that 20 percent new to nuclear or new to Darlington are coming, it's that 80 percent that are helping to make sure they recognize that nuclear is different and the culture that we instill is different.

You know, we're days of Unit 3. Overall, our safety performance is good, but we -- like we always will have low-level units that we need to continue to

assess, manage and understand, and I think we're doing that with vigor, you know, leveraging the lessons learned from Unit 2. I think we're all over the low-level units early in Unit 3 and I think with that continuity of leadership and continuity of trades, I think we will be in a much better spot.

THE PRESIDENT: Thank you very much for that.

Dr. Berube.

MEMBER BERUBE: Yes. I wanted to say congratulations on the restoration of Unit 2 into service. It's a major undertaking for all stakeholders. Congratulations to OPG and CNSC as well for getting that done.

The question I have, I guess, is for OPG. In terms of looking at your planning calendar for subsequent unit refits, the timeframe gets shorter and shorter for each one. Is this due to the -- your anticipation that you're going to have the same people through the -- through the majority of these projects or is this based on some critical path that you're getting a better handle on or tool design, training, all of the above?

Could you give me some insight as to why that is?

MR. ROSE: It's Gary Rose, for the record.

The original schedule for the refurbishment of the four units actually had all four units overlapped and they were all tied to the end of -- expected end of life for the fourth unit.

Our plan was to schedule the units so that we didn't have the last unit in idle time due to it, in essence, reaching its full effect power hours and requiring us to refurbish it.

So the schedule was set to ensure that we had no idle time on the fourth unit.

As we went through an understanding of the life remaining on the pressure tubes and looked at the opportunity to de-risk the project, we decided to execute Unit 2 on its own to de-risk the four-unit program, to focus on one unit, execute that well and understand the lessons learned and then apply them to the remaining three units that would be executed in an overlapped fashion.

So this has been our plan since late 2015, to execute it this way.

Now, when it comes to how do we manage that from a trades or an execution perspective, what we've done is we've -- our critical path, as you've seen, is we move reactor components, install reactor components, and

there's some feeders that happen.

We've, in essence, created three teams. The removal team will remove on Unit 3, then remove on Unit 1 and then remove on Unit 4, so we get that continuity of resources.

The install team will do the same, install on Unit 1 -- sorry, Unit 3, 1 and then 4.

The feeder team, the turbine generator team will be planned in accordingly that they can do their three units in the most effective time on the schedule. They've got a little bit more variability, especially the turbine generator.

So that's how we've optimized the plan in order to get all four units done in advance of the end of life of Unit 4.

THE PRESIDENT: Thank you.

I now -- you show on the slide the revised schedule -- and this is for OPG -- the revised schedule as a result of the pandemic. Has that extended the duration because it's kind of hard to tell from the slide, for Unit 3.

MR. ROSE: Gary Rose, for the record.

We -- it has not extended the duration of each units. We've pushed all three units together by four months, so in essence, the last Unit 4 is pushed out four

months from what it would have been on the prior schedule.

Still within the 2026 period, but delayed by four months because of the four-month delay on Unit 3.

THE PRESIDENT: And what about your other comment on moving away from the 24/7 schedule to the different one? Has that changed the duration?

And help me understand why the change in approach.

MR. ROSE: So there's two parts there.

The first part, what you're looking at the schedule in generally our high confidence schedule, which is 40 months on Unit 2, 40 months on Unit 3, and then I think it is 38 and 37 on the other two. So our shift to a modified schedule, we still are delivering the refurbishment within those timeframes. The working schedule for Unit 3 is actually 35 months, so about the same as it was for Unit 2, a little bit less.

Obviously, our confidence in our doability, our efficiency and productivity based on lessons learned from Unit 2, applies to that as well.

Now, the reason why we shift from the 24/7 schedule to this hybrid schedule, hybrid approach, there are a couple of reasons.

One, we are concerned about the total number of trades that are available. So by going to this

schedule where we might be working 5/10 or 6/10, you actually require less trades to execute that work when you give them the time off versus going 24/7 where you have four crews that are working usually 4/10s on, 4/10s off, working 24/7. So it allows us to do that.

Now, the other thing is we probably in the end won't take days off on this project, even though we are not working seven days a week. What we will do is schedule things that can be done on those off days such as tooling maintenance or vault cleanup or, you know, things of that nature to make sure that the work is being executed well. So really, it is to do with the -- we reviewed this and it is to do with the fact that we have a lower number of trades and we have two units going in parallel as well as Bruce Power. We wanted to -- that is a risk, so that protects that risk. And we think it is better for the trades and again you have the same continuity of people working from one unit to the next unit. We can commit to long periods of time here with them.

THE PRESIDENT: Thank you.

Commission Members, any questions?

While I wait to see more hands up, a question to CNSC staff. I can't remember what the difference in schedule is between Darlington 3 and Bruce Unit 6, and given the extensive effort required by CNSC

staff, particularly around release of regulatory hold points, are those two pretty much in sync or are they staggered?

Can someone from staff help me with that?

MR. BURTA: John Burta, for the record.

Just allow me a moment to consult with my colleagues and get back with an answer.

THE PRESIDENT: Thank you. While you are getting that, John, I see Dr. Berube has his hand up, so we will come back to you, okay.

Dr. Berube...?

MEMBER BERUBE: Yes. My question is for CNSC and it is in a similar vein because of the issue with how much refurbishment is going on at the same time.

But one of the questions I have for CNSC is what is the level of communication between the Bruce refit and OPG's refit? How much information is flowing back and forth? Are people actually flowing back and forth? So what level of expertise is actually moving from site to site and how much training is actually going on? Because at the end of the day this is going to be a long haul and that means various things are going to happen and we have to ensure there is continuity of inspectors, various other people that are doing all this checking. So could you give me some feedback on what you have planned

there, what you are doing now?

MR. BURTA: John Burta, for the record.

So normally, absolutely we would have frequent exchanges of staff between sites, between the two site offices. Inspectors would travel from one site to participate in an inspection that might be planned in the very near future at their site. So this is a common practice within CNSC and normally this would happen frequently.

However, with the COVID-19 pandemic, obviously there are certain challenges that we face and we are not at this time encouraging inspectors to travel from one site to another. Staff are still accessing their own home site, but travelling within regions isn't something that we are participating in right now. Hopefully that will change in the very near future, but to answer your question, it is something we plan for, it is something that we conduct routinely, but it is not happening at this time.

MEMBER BERUBE: And just a question on, you know, how do you ensure continuity for training and this kind of stuff? Because we are talking here, you know, half a decade more maybe to actually get this all done. It is going to be a long haul.

MR. BURTA: John Burta, for the record.

So as you can see, we have a team

supporting us, it isn't just one person conducting the work. The team lead is typically supported by a number of people who are up-and-coming and may become the next team lead or be able to support a project in the same way they have observed it being led in previous refurbishments.

In addition, we have a comprehensive project management program that requires us to document a project closeout report and key lessons learned that can be shared with people being requested to take on key leadership roles and projects as they develop.

THE PRESIDENT: Mr. Rose...?

MR. ROSE: Yes. I wanted to look back -- again, Gary Rose, for the record.

I wanted to look back to the earlier question about the schedules and I don't think I answered one part of the question. I think the question was why is Unit 4 shorter than the earlier units. It is our plan as we planned out the units that -- and especially with the continuity of resources going from Units 3 to 1 to 4, that our production rates will improve, our performance will improve, you know. Obviously going through Unit 2, doing it one time, we are seeing some shorter durations second, third and fourth time through things and expect that and build that into our overall plans. So, Unit 4 is high confidence 37, likely going to be less than that when we

get into the details of the working schedule.

THE PRESIDENT: Great. Thanks for that.

Mr. Burta, do you have an answer as to where Bruce 6 is compared to D3?

MR. BURTA: John Burta, for the record.

I will ask if my colleague Mr. Jeff Stevenson is available and he is the Refurbishment Lead for the Bruce Regulatory Program Division. He can respond to the question as to where the Bruce units are and then hopefully we can supplement that with the Darlington units.

MR. STEVENSON: Jeff Stevenson, Power Reactor Site Inspector, for the record.

As you know, Bruce Unit 6 is shut down right now. It began its refurbishment outage in January of 2020. It is expected to return to service in the spring to summer of 2023, which I will pass it back to Mr. Burta, who can elaborate on what Darlington Unit 3 schedule looks like.

THE PRESIDENT: All right. That's fine. I think we see what the Darlington schedule is, so there is a deferral. I didn't want Mr. Jammal to have to handle two hold point approvals that are happening simultaneously, but it looks like there is, you know, maybe six months' difference or maybe more.

Any additional questions from Commission

Members?

Dr. Berube...?

MEMBER BERUBE: Just one more question pertaining basically to historical documentation. Obviously when these plants were commissioned a number of years ago, all of these processes had to be pretty much done to bring the units up from cold, from initial design to in-service. To what extent or degree has that documentation influenced your return to service provisions and plans? Has any of that been useful or have you had to reinvent the whole thing?

We will start with CNSC.

MR. BURTA: With respect to the -- John Burta, for the record.

With respect to the unit-specific documentation that was created when the units were originally brought online, I don't have any comment for that, it is not something I am prepared to answer.

I know that there is very rigorous documentation that is required during the return to service that CNSC staff evaluate and we inspect as part of our removal of the hold points. I can confirm that that was done in compliance with OPG's procedures and met the expectations. But with respect to a comparison from the original first operation to now, I don't have a comment for

that, but if you would like we can provide something to you.

MEMBER BERUBE: No, I'm just curious to see how much we are using historical documentation to advantage, if there is an advantage at all.

OPG, could you comment on this as well?

MR. ROSE: Hello, it's Gary Rose, for the record.

My perspective is that the Darlington documentation, historical documentation was actually in very good shape and we have leveraged from an engineering perspective that reasonably well. Notwithstanding, as was stated, as we put systems back in service there is new documentation that gets updated and will be part of our configuration management system going forward.

Also, there are a number of new modifications that we are putting in place, such as the safety improvement opportunity projects, et cetera, that we will establish the initial configuration management documentation for those systems.

So without all the detail, I believe, like I said, Darlington was a good starting point which helped us out immensely for Unit 2 and will for the subsequent units.

THE PRESIDENT: We can get Mr. Gregoris

and then Mr. Burta to add to that.

MR. GREGORIS: Yes. Steve Gregoris, for the record,

So what I would add to what Gary Rose said, you know, one of the key things that we were able to use -- and I'm sure Gary could expand on it if needed -- is operating experience, and operating experience that goes back to commissioning days. And what was, I will say, of value for us is that the project did have some people that were part of original commissioning, part of Unit 2. And so there was, you know, operating experience on record and operating experience in person that would help us develop plans and to, you know, be best prepared for the return to service of Unit 2.

And I think maybe the last thing I will offer is there are very clear records for materials and for certain commissioning specs and I know in some of -- you know, as the new material was put in, flows changed, some pressures changed because you don't have brand-new material that hasn't seen aging or any kind of buildup of material. So going into the original records and looking in the operating experience and how we dealt with things back in original commissioning were applied to deal with Unit 2 return to service as well.

THE PRESIDENT: All right. Thank you.

Mr. Burta...?

MR. BURTA: John Burta, for the record.

I would like to ask if my colleagues in the Management Systems Division would like to add anything from a configuration management or engineering change control perspective?

MR. WONG: This is Paul Wong, Management System Specialist.

The documentation -- one of the inspections that we have planned to carry out very soon is to verify the documentation configuration as a result of all the changes we made during refurbishment. That is still in the plan in the early new year, but the configuration is going to show that the changes have -- the plant configuration as built will be in line with the documentation and vice versa obviously.

THE PRESIDENT: Okay. Thank you.

Anyone with any more questions? No.

So OPG, thank you very much for the update today. Very reassuring, very informative, and echoing the congratulations that you heard from my colleagues on the safe return to service and its reliable operations now.

And to CNSC staff, because I know the superhuman effort that was required to release the regulatory hold points during the pandemic, so thank you to

you as well for the work that was done by you.

So with that, we conclude the public meeting for today and the Commission Meeting will resume tomorrow at 9:00 a.m.

So again, all of you, thank you for your participation and bonne fin de journée.

Au revoir.

--- Whereupon the meeting adjourned at 3:26 p.m.,
to resume on Thursday, December 10, 2020
at 9:00 a.m. / La réunion est ajournée à 15 h 26
pour reprendre le jeudi 10 décembre 2020
à 9 h 00