

Canadian Nuclear
Safety Commission

Commission canadienne de
sûreté nucléaire

Public meeting

Réunion publique

September 16th, 2020

Le 16 septembre 2020

Public Hearing Room
14th floor
280 Slater Street
Ottawa, Ontario

Salle des audiences publiques
14^e étage
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

M^e Lisa Thiele

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Ottawa, Ontario / Ottawa (Ontario)

--- Upon commencing on Wednesday, September 16,
2020 at 9:00 a.m. / La réunion débute le
mercredi 16 septembre 2020 à 9 h 00

Opening Remarks

THE PRESIDENT: Good morning, and welcome to this virtual 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 I am conducting this virtual Commission Meeting from Ottawa in the unceded traditional territory of the Algonquin peoples.

Je vous souhaite la bienvenue. 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, is also joining us remotely, and Mr. Marc Leblanc, Secretary of the Commission, is with me on the

podium today.

As always, I would like to begin today's Commission Meeting with a Safety Moment and today's moment is, not surprisingly, on COVID and the need for continued vigilance.

Basically, we see the numbers of Canadians testing positive increasing and, alarmingly, in all age groups. Whilst we are very thankful that no CNSC employee has tested positive to date, I realize that sadly it is inevitable before someone does.

With all experts warning of an impending second wave, it is even more critical that we don't let our guard down. Remember, in our business complacency is our greatest enemy.

I want to assure everyone that rigorous protocols are in place at the CNSC to protect our employees and everyone who we interface with in the course of carrying out our business. We have therefore decided that all Commission proceedings for the balance of 2020 will be conducted virtually and this practice will likely continue into 2021.

Let me remind you of the four essential things each and every one of us must continue doing:

- one, maintain safe physical distance and avoid large gathering;

- two, wash your hands regularly;
- three, wear a facemask when indoors in public spaces or where you can't maintain safe physical distance; and

- four, if you have COVID-type symptoms, get tested and isolate yourself.

Remember, we are only as strong as our weakest link. Make sure you are not that weak link.

Thank you.

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.

J'aimerais aborder certains aspects touchant le déroulement de la réunion d'aujourd'hui.

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 closure of the proceedings.

As a courtesy to others, please mute yourself if you are not presenting or answering a question. As usual, the President will be coordinating the questions to avoid having two people talking at the same time. During the questions, if you wish to provide an answer or add a comment, please use the Raising Hand function.

The *Nuclear Safety and Control Act* authorizes the Commission to hold meetings for the conduct of its business. Please refer to the revised agenda published on September 15th for the complete list of items to be presented today.

I also wish to note that all the Commission Member Documents, also referred to as CMDs, listed on the agenda are available on the CNSC website.

In addition to the written documents reviewed by the Commission for this meeting, CNSC staff and other registered participants will have an opportunity to make verbal comments and Commission Members will be afforded an opportunity to ask questions on the items before us today.

Madame Velshi, présidente et première

dirigeante de la CCSN, va présider la réunion publique d'aujourd'hui.

President Velshi...?

THE PRESIDENT: With this information, I would now like to call for the adoption of the agenda by the Commission Members, as outlined in Commission Member Document CMD 20-M19.A.

CMD 20-M19.A

Adoption of Agenda

Do we have concurrence?

For the record, the agenda is adopted.

CMD 20-M28

Approval of the Minutes of Commission Meeting held on June 17-18, 2020

THE PRESIDENT: I will now call for the approval of the Minutes of the Commission meeting held on June 17-18, 2020, as outlined in CMD 20-M28.

Are there any comments, additions or deletions that the Commission Members wish to make to the draft minutes?

I note that the Minutes of the Commission

include the decision from the Commission to approve for publication and use the five waste-related regulatory documents presented on June 18, 2020.

I note that there are no changes.

Therefore, I would ask the Commission Members to approve the minutes.

Do we have concurrence?

Thank you.

For the record, the Minutes of the June 17-18 Commission meeting are approved.

The first item on the agenda is the Status Report on Power Reactors, as outlined in CMD 20-M20.

This item also includes information on Ontario Power Generation's recent corporate reorganization.

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.

Mr. Frappier, do you have anything to add before I turn the floor to my colleagues for questions?

CMD 20-M20

Oral presentation by CNSC staff

MR. FRAPPIER: Yes.

Good morning and thank you for this opportunity. Good morning to Madam President and Members of the Commission.

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

With me today are the Regulatory Program Directors for each site, some of the technical managers and specialists, and, as you mentioned, representatives from industry.

The Status Report on Power Reactors, CMD 20-M20, was finalized on September 9th and the following updates I would like to present at this moment.

For Bruce Power, Unit 2 is now at 81 percent due to delays in fuelling.

For Pickering, Unit 1 is at 77 percent and is returning to full power. The heavy water spill has been cleaned up and the primary heat transport piping has been repaired.

As I noted previously, during this current pandemic we have had some effects on our operations and while we did pause regarding on-site NPP inspections due to the COVID pandemic and then returned to on-site inspections focusing primarily on the licensee's business continuity program, we are now effectively back to normal levels and

it is no longer just business continuity focused. However, technical support continues to be provided by our Ottawa-based experts remotely, using virtual meetings and telephone support.

I would like to take this opportunity, for the record, to note the hard work and creative approaches that the CNSC staff have used to develop new oversight practices under these pandemic conditions to provide assurances of compliance to nuclear safety requirements. This includes our inspection and technical staff, as well as the great efforts by our information technology divisions.

With this, this concludes the update for today and we are happy to take any questions you may have.

THE PRESIDENT: Thank you, Mr. Frappier.

I will now open the floor for questions from Commission Members to CNSC staff and licensees.

We will start with Dr. Demeter.

MEMBER DEMETER: Thank you very much.

I think it may be worth clarifying for those who are listening that although the power reactor operating licence for Pickering site expires on August 31, 2028, the licence for the Pickering Nuclear Generating Station does not allow operations beyond December 31, 2024, just so that the operating licence and the operations --

--- Technical difficulties / Difficultés techniques

THE PRESIDENT: I think we --

MEMBER DEMETER: -- just so that people understand that nuance. Maybe --

THE PRESIDENT: I think Dr. Demeter is having some technical issues, so why don't we move to Dr. McKinnon.

MEMBER DEMETER: Oh, okay.

MEMBER MCKINNON: Okay. Thank you.

I have a general question about the heavy water leakage at Pickering, so my question I guess would be to OPG Pickering operators.

For heavy water leakages such as this one, what mitigation measures are designed in place to help prevent potential groundwater contamination?

MR. GEOFROY: It's Richard Geofroy, for the record. I am the Director of Ops and Maintenance at the Pickering Generating Station.

So there are a number of design features in place.

So first and foremost are our containment structure, so several feet of concrete to contain any radioactivity released within the containment.

And the means of manoeuvring or moving water from containment out of that system to storage tanks

is through enclosed piping networks within the station.

THE PRESIDENT: Thank you, Mr. Geofroy.

A follow-up question more from a worker safety perspective, since there were very few details provided in the reports to us. Can you share with us what was the volume of the leak? What were the tritium levels? Were there any uptakes by workers?

MR. GEOFROY: Sure, I can.

Richard Geofroy, for the record.

So the leak was specifically from our fuel machine D₂O supply system, not directly from the primary heat transport coolant system.

Approximately 35 megagrams of water spilled. So that water has since been recovered either through drumming or through processing through our building liquid recovery system.

Execution or recovery of that water was performed either through pumps to drums or pumps through the building liquid recovery system tanks.

During the execution of that recovery, no staff exceeded any dose requirements and no unplanned uptakes occurred during execution as well.

THE PRESIDENT: Thank you.

Dr. Berube...?

MEMBER BERUBE: Yes. I have another

question for OPG as it pertains to the Pickering leak.

Here it says basically that a filter pressure gauge had a failure. Could you describe exactly what the nature of the leak was? Was it a cracked pipe, seal failure, gauge blew off? What exactly happened here?

MR. GEOFROY: Again, Richard Geofroy, for the record.

So it was a pressure gauge loop that measures differential pressure across a filter and what we saw was a pressure boundary failure in the pipe.

MEMBER BERUBE: That's a physical crack then or what kind of failure are we talking about?

MR. GEOFROY: Correct, it was a cracked pipe. The pipe actually I will say sheared or failed off and it was approximately an inch, inch and a half pipe.

MEMBER BERUBE: Thank you.

THE PRESIDENT: Moving on to Dr. Lacroix.

MEMBER LACROIX: Thank you, Madam President.

This is a question for Pickering.

This is my perception. Whenever I read a status report on power reactors it seems to me that there is a frequent -- well, there are frequent failures of fuelling machines. So I was wondering, is it a normal part of the operation or is it due to the fact that the

equipment is getting old?

MR. GEOFROY: Richard Geofroy, for the record.

One of the unique features of CANDU design is on power fuelling. The fuel machines are a complex machine and not only is the fuel machine system significant to fuelling but the transfer of fuel and the management of both new and irradiated fuel occurs through a number of different systems and machines. So we have a very strong preventive maintenance program for those machines. The equipment reliability for our fuel machine system at Pickering is the highest we have seen, I will say, in station history at this point in time. So we continue to put significant effort, resources to ensure the reliability of those machines. With six units, two machines per unit and the auxiliary system associated with that, there are a number of components there that we are required to maintain. A failure in any one of those systems could affect fuel machine availability and that's why perhaps you hear that, but from a system reliability perspective, I will say operating better than it has before and we continue to ensure that it will continue to operate safely right till end of life and beyond, because we will need those systems to defuel the reactors as well.

THE PRESIDENT: Thank you.

Moving back, then, to Dr. Demeter.

Dr. Demeter...?

MEMBER DEMETER: Let's see if it works better this time.

I think it might be worth staff clarifying for those that are listening that although the report talks about the power reactor operating licence expiring August 31, 2028, the OPG operating licence does not allow the Pickering Nuclear Generating Station to operate beyond December 31, 2024. Perhaps it would be good to clarify the two years for the public and what happens in those other four years currently.

MR. FRAPPIER: Gerry Frappier, for the record. Perhaps I can start this and if you want more detail we can get it.

But yes, you are correct. To be precise, there is an operating licence that is in place and expires August 31, 2028, but within that licence it only allows the Pickering units to continue to be operational until December of 2024. So the operation of the reactors themselves must be shut down by December of 2024. However, after that there are several what we would call operational things that need to be done to ensure that the reactors get put into a safe storage state and those activities are done under an operating licence and that will continue post

December 2024.

But you are absolutely correct that currently they are allowed to keep the reactors critical, operating only until December 2024.

THE PRESIDENT: Thank you.

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

MEMBER DEMETER: No, that clarifies it.

Thank you.

THE PRESIDENT: Okay.

Dr. McKinnon, any further questions?

MEMBER MCKINNON: No further questions.

THE PRESIDENT: Dr. Berube...?

MEMBER BERUBE: I have one pertaining to Pickering as well.

In light of the recent release from the Province of Ontario with their intent to extend operating at Pickering, the question is for the CNSC staff: Have we received any kind of formal notification that this intends to happen? And maybe for OPG, you could tell us a little bit of what you are doing in the background with regard to this decision.

MR. FRAPPIER: Gerry Frappier, for the record.

So you are correct that is certainly

within the media. The government, as in the provincial government has indicated a desire to have Pickering operate beyond December 2024. I think everybody has been very clear in all that that that is subject to the approval of the CNSC Commission, yourselves.

From a licensing perspective, they do not have the ability, as we were just talking about, to keep the reactors operating beyond December 2024 and they would have to come before the Commission with a request. We have not received that request at this point in time and, as you mentioned, perhaps OPG would like to comment on where they are with their thinking on that. But to be clear, they will have to come to the Commission and you will decide whether it is appropriate for them to operate beyond December 2024.

THE PRESIDENT: OPG...?

MR. VECCHIARELLI: Good morning. It's Jack Vecchiarelli, for the record, Vice President of Nuclear Regulatory Affairs and Stakeholder Relations for OPG.

We do have a formal requirement to notify the CNSC in writing by the end of 2022 of our planned shutdown dates for the Pickering units and we will be complying with that.

With respect to the announcement, yes, we

are continuing to explore our proposed direction of extending certain units' operation past 2024, into 2025, subject to CNSC approval.

As part of that we are looking at all of the conclusions from the Periodic Safety Review to make sure that they remain valid. So that is part of the type of work that is being undertaken and which we will be engaging with CNSC staff to ensure that their expectations are met.

THE PRESIDENT: Thank you.

Dr. Lacroix, any further questions?

MEMBER LACROIX: No further questions.

THE PRESIDENT: I have a question for Point Lepreau. And thank you for providing the details in the report on the additional measures for the outage that is underway, some quite unique, from what we have seen at the outages at the other facilities.

There are two questions.

One is if you can talk a little bit about the isolation process for workers travelling from outside Atlantic Canada. Is it the two-week quarantine or are they getting sequestered even once they are at the plant?

And the second one is: Has the duration of the outage increased as a result of all these additional measures that need to be taken? What has been the impact

on the duration of the outage?

So Point Lepreau, please...?

--- Pause

THE PRESIDENT: Is Jason Nouwens with us online?

--- Pause

MR. FRAPPIER: Gerry Frappier, for the record.

Perhaps New Brunswick Power is not on the line right now. We thought they would be, but perhaps our site supervisor, Heather Davis, can provide some of those responses.

Heather, can you add to this?

Oh, I see --

MR. NOUWENS: Can you hear me now?

THE PRESIDENT: Yes, Jason, we can. Thank you.

MR. NOUWENS: I'm sorry for that, I had some IT difficulties getting off of mute. Okay. So you can hear me clearly now.

So, for the record, my name is Jason Nouwens, I am the Director of Regulatory Affairs at Point Lepreau.

With respect to your first question on isolation of contractors primarily, so our process really

entails that any contractors that were not local to Point Lepreau came to New Brunswick under strict isolation requirements and isolated basically in segregation for two full weeks prior to attending site. Part of that isolation included COVID testing upon arrival to the province and also testing throughout the 14-day period and then there was a final test before those contractors were released from their isolation. We did all of that in August and it ended approximately a week prior to the start of our outage.

With respect to the second question on changes to our work plant and our overall duration of the outage, the overall duration of the outage has not changed, but, as you have seen in the report, we did have to implement a lot of additional measures that required us to really look at our work practices and our interactions at the station to make sure that the extra measures we put in place could be done efficiently, provided the adequate level of safety, but overall didn't have a detrimental effect to the work that we needed to complete.

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

Mr. Frappier, did you or your staff have anything to add?

MR. FRAPPIER: Gerry Frappier, for the

record.

We have been following the preparations for the outage at Point Lepreau for some time now. We are fully in place. I would like to note that the inspectors responsible for the oversight of this outage are, of course, already in New Brunswick.

From a CNSC staffing perspective, we have staff on site.

And perhaps, Ms Davis, you would like to add a little bit as to how prepared you are for the outage coming up.

MS DAVIS: Good morning, Madam Velshi and the Commission Members. My name is Heather Davis, and I am the power reactor site office supervisor for the Point Lepreau site office.

For the outage, we have approximately 18 planned field inspections that we plan to conduct over the course of the outage. Many of these inspections focus in on the areas of adherence with the COVID protocols, in the areas of radiation protection, work protection and procedure adherence.

THE PRESIDENT: Okay, thank you. Thanks very much.

And on behalf of my fellow Commission Members, I really do want to extend my thanks and

compliments to both the CNSC Staff and to all our licensees for their vigilance and oversight and really coming up to the forefront in how we've managed to cope with the challenges posed by COVID and still deliver on our respective mandates, ensuring safety and keeping that at foremost priority.

So again, thank you very much for that, and thank you for that status update.

Our next item on the agenda is on the CNSC oversight of the nuclear power plants' maintenance programs.

I note that we have representatives from the nuclear power plants available for questions after the CNSC Staff presentation, and they can identify themselves later before speaking.

I'll turn the floor to CNSC Staff for their presentation, so Mr. Frappier, the floor is yours again.

CMD 20-M21

Oral presentation by CNSC staff

MR. FRAPPIER: Thank you very much, and I hope everybody can see the presentation.

So good morning again, Commission Members.

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

Mr. Mike Rinker, who has recently assumed the role of Director General of the Directorate of Assessment and Analysis, known as DAA, is also present and will participate in this presentation.

Also with me today is Ms Kim Campbell and Mr. Lee Casterton from our power reactor integration division, the key technical leaders associated with the maintenance program, who will introduce themselves as they speak, and Mr. Ed Leader, our Site Supervisor at the Pickering site, who will provide a site perspective on maintenance as required.

Licensees, as you mentioned, are also online to respond to any questions.

We are here today to provide information on the CNSC's regulatory oversight of maintenance programs at the nuclear power plants in Canada. Today's presentation will be made jointly by DPRR and DAA, as there is a very strong collaboration between these two Directorates for the regulatory oversight of this particular specific area.

Following the 2018 Pickering licensing hearings, the Pickering Regulatory Program Division

proposed that a technical briefing be provided to the Commission on the CNSC's regulatory oversight of maintenance programs due to the pretty heavy interest, I would say, that the Commission Members had with respect to maintenance and how we monitor it.

Maintenance is a specific area under our fitness for service Safety and Control Area, and it has been an area of interest for the Commission during licensing hearings and during the annual Regulatory Oversight Report. The Commission has shown an interest via their questions in how CNSC Staff interpret the actual meanings of the maintenance related to Safety Performance Indicators and how CNSC Staff assess the safety significance of the SPIs.

As a result, staff proposed a technical briefing to be provided to the Commission specifically on the CNSC's regulatory oversight, and that's the purpose of today's presentation.

Next slide, please.

This slide provides the outline -- I think somebody's going to do that. There we go.

This slide provides an outline of this presentation. The presentation starts with a general description of the Power Reactor Regulatory Program oversight. Afterwards, the applicable maintenance related

regulatory documents and standards, and the required elements of a NPP maintenance program will be briefly introduced.

Next, the interfacing licensee programs will be explained to give a more comprehensive picture, which demonstrates why it is important to have a close coordination and cooperation within the CNSC of the multi-disciplinary maintenance team.

Focus will then be shifted to describe how CNSC Staff conduct the regulatory oversight for the maintenance program, the relevant compliance activities including inspections, assessment and evaluating the maintenance related safety performance indicators. At the end, we'll conclude that the CNSC regulatory oversight of maintenance programs at NPPs is systematic, modern, responsive and Transparent.

I will now turn the presentation over to Mr. Casterton, who will provide a general description of the Power Reactor Regulatory Program oversight.

Lee?

MR. CASTERTON: Thank you, Mr. Frappier, and good morning Members of the Commission.

My name is Lee Casterton and I am a senior regulatory program officer in the Power Reactor Licensing

and Compliance Integration Division.

Currently, there are four operating nuclear power plants in Canada, three in Ontario and one in New Brunswick. The Power Reactor Regulatory Program provides effective, efficient and risk-informed regulatory oversight of these operating nuclear power plants.

Risk-informed is paramount to ensuring oversight activities are planned and conducted in the appropriate areas and at the appropriate frequency, resulting in an effective and efficient oversight program.

The Power Reactor Regulatory Program is supported by 28 CNSC divisions from six directorates across the organization. This ensures an integrated and collaborative approach is taken in the execution of the Power Reactor Regulatory Program through licensing and compliance activities.

Safety and control areas are the technical topics used by the CNSC to assess, review and report on regulatory requirements as well as performance across all regulated facilities and activities. The CNSC uses the 14 safety and control areas shown here.

Safety and Control Area 6, Fitness for

service, is highlighted here as maintenance falls within this SCA.

Regulatory oversight begins with a licence issued by the Commission. In the case of operating NPPs, the licence is called the Power Reactor Operating Licence. The licence sets out the regulatory requirements, known as licence conditions, that licensees must meet to stay in compliance with the licence.

The Licence Conditions Handbook provides more detail on the regulatory requirements identified in the licence as Compliance Verification Criteria. The Compliance Verification Criteria identify, for example, the regulatory documents and CSA standards that licensees must comply with.

From the regulatory requirements identified in the licence and the LCH, we establish a five-year baseline compliance verification plan for the Power Reactor Regulatory Program. This plan is developed using a risk-informed approach and identifies the oversight activities that must be completed by CNSC Staff as well as their frequency.

Each operating NPP is overseen by a regulatory program division in the Directorate of Power Reactor Regulation. The regulatory program division, using the five-year baseline plan, develops an annual

NPP-specific compliance verification plan.

All compliance verification activities captured in the annual plan must be conducted in accordance with approved procedures.

This includes governance procedures found in the CNSC management system for planning and conducting the verification activity, including specific inspection guides for the conduct of each individual inspection.

The CNSC prepares an annual Regulatory Oversight Report for Nuclear Power Plants that is presented to the Commission and is of interest to the public and other stakeholders. The report discusses the results of oversight activities conducted during the previous calendar year and provides an overall rating for each SCA.

I will now walk you through how we get from the Power Reactor Operating Licence to the detailed inspection criteria that are used when conducting oversight activities in the area of maintenance.

The licence includes licence condition such as 6.1 seen here. As a condition of their licence, licensees must implement and maintain a fitness for service program. This licence condition is then further explained in the Licence Conditions Handbook as will be shown on the

next slide.

Each licence condition is captured in the Licence Conditions Handbook. The *Licence Condition Handbook* provides the licensee with clear and detailed criteria for regulatory compliance, called compliance verification criteria.

Shown here are the compliance verification criteria for the requirements of the Fitness for Service program. The compliance verification criteria are categorized for each Specific Area of an SCA. The compliance verification criteria contain CNSC Regulatory Documents, CSA standards and other documents that the licensee must meet.

The SCA structure documents systematically align with the licence and the LCH. The SCA structure captures the compliance verification criteria in the LCH and summarizes the typical activities which are used to verify compliance with the SCA requirements and compliance verification criteria.

These compliance verification activities are categorized as compliance assessments, inspections and surveillance and monitoring.

All compliance verification activities have corresponding mandatory processes and procedures which are approval by CNSC management. This ensure that the

manner in which these activities are conducted is consistent, valid and fair.

Shown here are examples of compliance assessments, site inspections and on-site surveillance and monitoring activities.

A common misunderstanding is that inspections only cover a single SCA. It is important to notice here that this type II maintenance inspection covers requirements from four different SCAs. This results in better efficiency and effectiveness of inspection resources and ensures that cross-cutting areas like maintenance are appropriately inspected by all necessary divisions and associated subject matter experts.

On March 15, 2020, the CNSC activated the Business Continuity Plan 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. DPRR management immediately suspended all regular compliance activities and identified activities that were considered critical.

On April 28th, a procedure titled "DPRR Modified Compliance Activities During the COVID Pandemic" was established to ensure continued regulatory oversight. This procedure is to be utilized during and following the

COVID-19 pandemic until normal compliance processes resume.

It provides direction for the conduct of oversight activities both remotely and on site, as well as direction on revising the regulatory oversight plan for this fiscal year.

The procedure provides a framework for conducting remote oversight activities and 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 action databases, and participation in all key plant management meetings.

In addition to the new procedure, DPRR developed a pandemic related Pre-Job Brief as additional instructions to be delivered by the site office supervisors to site inspectors and site visitors prior to performing on-site activities. The provision of personal protective equipment to site inspectors prior to any on-site activities forms part of this Pre-Job Brief.

On May 5th, 2020, DPRR resumed on-site oversight activities in a limited capacity. These activities focused on general health and safety issues such as combustible material, housekeeping and contamination

posting as well as licensee adherence to their pandemic response plans and COVID-19 health protocols.

On-site inspections will also focus on understanding any incident-related concerns as well as critical activities related to the safe operation of the nuclear power plant and refurbishment projects.

During the pandemic, maintenance oversight activities have been conducted remotely in accordance with the new procedures.

Every year the CNSC prepares a regulatory oversight report for NPPs. This report is a comprehensive review of licensee performance in all 14 safety and control areas for the previous year. The report is written for the Commission, the public and indigenous groups, and undergoes a public review period. The report is then presented to the Commission in a public meeting that is webcasted.

In recent years, the public meeting has also included written interventions and made available Participant Funding through the CNSC Participant Funding Program.

Once presented to the Commission, the report is then revised to address any direction received from the Commission and published on the CNSC website in both official languages, English and French.

I will now pass the presentation to Mr. Liu. Thank you very much.

MR. LIU: Good morning, President Velshi and Members of the Commission. For the record, my name is Yong Chang Liu and I am the acting director and also the maintenance technical specialist of the System Engineering Division.

The presentation now will focus on the maintenance specific area under fitness for service SCA as the major topic of this CMD. At the beginning, we would like to give a brief introduction of maintenance related regulatory documents and standards.

All three regulatory documents currently under fitness for services SCA are related to maintenance. The most prominent one is REGDOC 2.6.2, Maintenance Programs for Nuclear Power Plants.

The regulatory requirements of REGDOC 2.6.2 were built based on a number of seed documents, including IAEA Safety Guide NS-G-2.6, Maintenance, Surveillance and In-service Inspection in Nuclear Power Plants, and also CSA standards 286, Management System Requirements for Nuclear Power Plants.

The next two slides will describe the major elements of a nuclear power plant maintenance program based on REGDOC 2.6.2. Please note that REGDOC 2.6.2

superseded RD/GD210 in 2017 with no change of the requirements and guidance.

REGDOC 2.6.1, Reliability programs for nuclear power plants also includes maintenance related requirements. For example, the reliability program shall provide information to the maintenance program to maintain the effectiveness of the systems important to safety.

During operation, plant maintenance program may need to be improved to achieve the required system reliability.

REGDOC 2.6.3, Aging management, has very close relationship with plant maintenance program.

Effective aging management requires the support of a sound maintenance program.

CSA N286-12, Management system requirements for nuclear facilities, is the major standard that includes a number of generic requirements that impact many programs, including maintenance program; for example, the problem identification and resolution, self-assessment, the distribution and control of documents, et cetera.

CSA N290.9, Reliability and Maintenance Programs for Nuclear Power Plants, was published in 2019 and is listed as guidance in Bruce Power's *Licence Condition Handbook* at this time. It will

be gradually moved into the *Licence Condition Handbook* of the remaining stations.

This new standard supports and is also in line with REGDOC 2.6.1 and REGDOC 2.6.2.

The rest of the presentation will focus on the requirements in REGDOC 2.6.2.

As we already said, REGDOC 2.6.2 is the major regulatory document to define the regulatory requirements for the NPP maintenance program. Prior to explaining the CNSC oversight of nuclear power plants maintenance program, it would be useful to understand the two major types of maintenance activities in a nuclear power plant maintenance program, which are preventive maintenance activity and corrective maintenance activity as shown in this slide.

Preventive maintenance includes actions that detect or mitigate degradation of a Structures, Systems and Components, or SSC, to sustain or extend its life by controlling degradations and failures to an acceptable level.

Preventive maintenance may be periodic, predictive or planned. The examples of periodic preventive maintenance are overhaul or replacement of pumps and valves regardless of the actual conditions of the equipment.

Predictive maintenance are surveillance,

testing or condition monitoring of the SSC. The examples are the safety-related system testing, in-service inspection, vibration monitoring and lubrication oil analysis.

The results of predictive maintenance are fed into the planned maintenance activities. For example, if a testing or lubrication oil analysis indicate the prominent failure of a pump, the plant staff will raise a planned maintenance work order to fix the problem, therefore to prevent its failure.

Corrective maintenance, as a broad concept here, includes the actions that, by means of repair, overhaul or replacement, restore the capability of a failed or degraded component to perform its defined function within acceptance criteria. For certain equipment with very low or no safety significance, it is allowed to run to failure and these SSCs will be fixed by corrective maintenance.

Even for systems important to safety, certain random failures are allowed because of the redundancy of safety functions embedded in the plant design. The key is to ensure the reliability of the SSCs meets the design target, and if not, corrective actions have to be taken in a timely manner and be demonstrated effective.

Finally, yet importantly, the maintenance program, like many other programs, shall also have an optimization process in order to be continuously improved.

In addition to the two major types of maintenance activities, per REGDOC 2.6.2, the regulatory requirements of a NPP maintenance program are grouped to eight elements as indicated in this slide.

Program basis is one of the most important elements. It requires that the licensee follow a systematic approach to identify the preventive maintenance activities to be performed with proper intervals which shall take into account a number of factors, including the safety importance of the SSC, technical basis, applicable codes and standards, design requirements, vendor recommendations, aging management and reliability program requirements for systems important to safety.

REGDOC 2.6.2 requires that the licensee establish a maintenance organization to effectively implement the maintenance program. REGDOC 2.6.2 also requires that all maintenance work needs to be properly assessed, scheduled and executed, which is being verified by the maintenance work planning and scheduling type II inspection.

Monitoring of the systems, structures and

components is another key element. It should be pointed out that SSC monitoring typically is conducted by a licensee's performance engineering department rather than maintenance department. REGDOC 2.6.2 was published with a broad scope to include more than the activities that are conducted by the maintenance department in a nuclear power plant.

In order to maintain the SSC to be able to perform the designed safety functions, the licensee is required to monitor the actual condition of the SSC against the established baseline criteria. For systems important to safety, the baseline criteria include system reliability and availability.

The degree of SSC monitoring shall be commensurate with their safety significance. For systems with low safety significance, a high level system health monitoring is typically acceptable. Considering its importance, CNSC has a baseline SSC monitoring type II inspection and a baseline SSC monitoring field inspection. Maintenance-related inspections will be further elaborated in the maintenance inspection slides.

Spare parts procurement, program review, and record-keeping are essential components of an NPP maintenance program. They are monitored under the overall plant management systems and the relevant type II

maintenance inspections as well.

After giving the introduction of the NPP maintenance program, we also would like to use this opportunity to point out that maintenance program is not an isolated program. Maintenance program interfaces with and is also supported by many other plant programs.

Management system program is one of the most important interfacing programs. As we mentioned earlier, problem identification and resolution or corrective action program is crucial for any program. They are part of the station management system program, which is address by CSA N286 standard.

Maintenance program has a very tight relationship with plant reactor safety program. All safety-related maintenance work has to be well managed to ensure that defence-in-depth has been adequately maintained, as maintenance works often render certain safety-related system and equipment unavailable for a period of time.

Reliability program is directly supported by a sound maintenance program. It also provides important feedback to improve the maintenance programs if the required system and the component reliability has not been achieved.

A number of key elements under the aging

management program is generally achieved by the plant maintenance program, such as the replacement or overhaul of the heat transport pumps and motors. Condition monitoring activities to detect the progress of equipment aging is also being primarily implemented by maintenance work orders.

Environmental qualification is required under the existing licence condition for all NPPs. Environmental qualification has two implications on the maintenance program. Maintenance work may lead to the environmentally qualified equipment becoming unqualified. This could be as a result of an inadequate work assessment or workers' human performance error.

Another aspect is that in order to maintain its qualified state, many equipment with a limited environmentally qualified life have to be either overhauled or replaced during the lifetime of the plant.

Supply chain plays an important role to support the maintenance program. Insufficient inventory of parts and the consumable material will directly affect system reliability and availability.

The last program we would like to mention is the design program. Some repeated failed equipment or obsolete components may need to be eventually addressed by a design change.

Because of the close interaction of these just-explained interfacing programs, monitoring of NPPs' maintenance program requires an effective cooperation of a multi-disciplinary CNSC maintenance oversight team, which is shown by this slide.

Maintenance specialist has a very close interaction with the site inspectors. For example, maintenance specialist typically will be part of the team on all maintenance type II inspections. In addition, site inspectors are constantly monitoring the actual condition of safety-related systems. This information will be sent to maintenance specialists if adverse trend is observed. Action will be taken if deemed necessary.

To give an example, when a station restarted from refurbishment, site inspector observed that a number of safety-related system experienced a high number of functional failures which resulted in several forced outages and adverse system condition. After sending this information to maintenance specialists, a reactive type II inspection on system health program was conducted in 2015 by a multi-disciplinary CNSC inspection team, including maintenance specialist and management system specialist. The inspection found a program deficiency in licensee's system health program and also revealed that the implementation of the system health monitoring process is

not effectively monitored by the licensee. Based on these findings, a directive was then raised through an action item. The licensee took around two years to satisfactorily address the issue and meet all closure criteria of the action item. The action item was closed in 2017.

Maintenance specialist also has close communication with the regulatory program officer. For example, any safety performance indicator review finding will be sent to the regulatory program officer. The regulatory program officer typically conducts an independent verification and, if necessary, will set up a meeting with licensee to ensure the finding is understood and the appropriate actions are taken.

Moreover, there is very frequent discussion between maintenance specialists and other specialists listed in this slide. As we can see from the previous slide, maintenance program has very tight relationship with other programs; therefore, maintenance specialists have regular interaction with the specialists responsible for different programs and technical areas.

For your information, the different colours on the right side of this slide represent the cooperation of three major different directorates with the CNSC.

I will now pass the presentation to Mr.

Tabikh, who will provide more detailed information of maintenance-related inspections and reviews with a number of examples.

MR. TABIKH: Thank you, Mr. Liu.

Good morning, President Velshi and Members of the Commission. For the record, my name is Tarek Tabikh, and I am a process, mechanical, and maintenance specialist in the System Engineering Division.

As presented in the general regulatory oversight slide, CNSC uses three major tools to monitor the nuclear power plant maintenance programs. They are performing inspections, monitoring the safety performance indicators, and performing compliance assessments of licensees' submissions.

Maintenance-related baseline inspections are the most important compliance activities CNSC staff perform for oversight of the NPP maintenance programs. Three type II inspections have been established considering their critical roles on verifying that the safety functions of systems, structures, and components have been maintained as per requirements. These are performed to a five-year baseline inspection plan.

The first one listed is the maintenance work planning and scheduling inspection. The primary objective of this inspection is to confirm that maintenance

activities are prioritized, assessed, and scheduled appropriately considering the safety significance of the relevant SSCs. Typically, maintenance work is conducted in an environment with multiple hazards, including radioactivity. Maintenance work may also render the relevant equipment out of service for a certain period of time. The focus of this inspection is to ensure that the work has been reviewed to control the hazards and that adequate considerations for defence-in-depth have been made. The frequency of this inspection is once per five years per station.

The second inspection listed is the SSC monitoring inspection. Per REGDOC 2.6.2, safety-related SSCs have to be monitored and assessed against established baseline criteria. These criteria include reliability, availability, function, and performance requirements, which validate the assumptions used in the plant design and safety analysis.

The degree of SSC monitoring is commensurate with the safety significance of the SSC. The primary objective of this inspection is to verify that the SSC monitoring activities are established and implemented. If it is identified that baseline criteria has not been met, the inspection examines whether the licensee had taken adequate corrective actions in a timely manner to prevent

reoccurrence. The frequency of the inspection is once per five years per station as well.

The third inspection is the outage inspection. There is a very high amount of maintenance work concentrated during an outage and a significant amount of work that cannot be performed during online operation. The unit configuration also changes throughout the outage in support of specific maintenance activities. This requires special considerations, such as ensuring that adequate heat sink for decay heat removal is maintained and radiation hazards are controlled.

Field inspections are also performed as part of the maintenance program oversight and are conducted more frequently. These include maintenance work-execution field inspections and SSC monitoring field inspections. Maintenance work-execution field inspections verify that the work has been conducted per the approved work packages. The SSC monitoring field inspection is a simplified version of the SSC monitoring type II inspection in order to obtain the minimum required data on an annual basis.

There is no maintenance work planning and scheduling field inspection. This is considered acceptable since the performance of work planning and scheduling is relatively stable. In addition, working planning and scheduling is also monitored by the maintenance safety

performance indicators. Safety performance indicators or SPIs will be discussed in the next couple slides.

It should be pointed out that the other elements of the maintenance program are either verified by the above inspections or by other cross-cutting inspections. For example, program basis and spare parts are verified in the sampled systems during the SSC monitoring type II and field inspections. Spare parts by the supply chain inspection are also covered by the supply chain inspection led by the management system specialists. Organization, record-keeping, program review, and self-assessment are mandatory items for all type II inspections.

We would also like to point out that the safety significance rating of inspection findings follows the risk-informed approach. This implies that the level of our regulatory enforcement is commensurate with the level of risk of the corresponding finding.

Overall, we have high confidence that there is good coverage of all elements of the maintenance program through the previously discussed maintenance-related inspections.

Now we will move on to the next slide, which will explain the other inspections that provide a supporting role.

Here we see a list of the other major inspections that support the maintenance program. System inspections verify whether the system has been properly monitored and maintained in order to achieve the required design function.

Software plays an important safety role in CANDU plants as safety-related systems use software to implement its safety functions, including the shutdown systems and the reactor regulating system. Software inspections ensure that the software is maintained with very rigorous configuration control.

Environmental qualification is a process which ensures that all required SSCs are capable of performing their designated safety functions in a postulated harsh environment resulting from a design-basis accident. The purpose of the EQ inspection is to ensure compliance with the EQ requirements and that the operation and maintenance activities have not compromised the qualified state of the SSC.

The instrument calibration inspection is also maintenance-related, as most calibrations are managed by the station maintenance program.

In addition to these supporting inspections, continuous regulatory oversight of the maintenance program is provided by on-site inspectors.

We would also like to point out that supplemental compliance verification activities, such as reactive maintenance inspections, may be promptly conducted to respond to newly emerging risks in the licensee's maintenance program that may have been revealed from event reviews or SPI reviews. Examples will be given in the upcoming slides.

In addition to the inspections, CNSC staff also conduct a number of maintenance-related compliance assessments.

Per REGDOC 3.1.1, the licensee is required to submit scheduled reports, such as the quarterly SPI reports. Also per REGDOC 3.1.1, the licensee has to submit unscheduled event reports if the specified reporting criteria have been met.

To give an example of a maintenance-related event reporting requirement, the licensee shall report on any failure to perform a safety-related system test that is required by the licence condition, given that this test has not been deferred in accordance with permitted procedures. This type of event is directly related to maintenance work planning and scheduling. After receiving the event report, CNSC specialists review the cause of the event and ensure that actions taken by the licensee are suitable.

Based on the review of event reports, CNSC staff may trigger additional compliance assessments if the event itself has or potentially has safety-significant impact on safe plant operation. For example, after a main heat transport system pump seal failure occurred at one of the licensee's stations, CNSC staff formed a multi-disciplinary team to review the event, which included a maintenance specialist.

Compliance assessments are also conducted when licensees submit new or revised documents, including the new revision of maintenance-related governance documents referenced in the *Licence Condition Handbook*.

The presentation will now focus on explaining the maintenance-related safety performance indicators. Maintenance indicators, such as the maintenance backlogs, were often questioned by the Commission and the public in Commission meetings and hearings. We would like to use this opportunity to explain the meaning of each one of the indicators.

There are four maintenance-related safety performance indicators, and they are SPI 14, which is the corrective maintenance backlog; SPI 15, which is the deficient maintenance backlog; SPI 16, which is the number of preventive maintenance deferrals; and SPI 18, which is the preventive maintenance completion ratio. We will

discuss each one in detail in the upcoming slides.

SPI 14 provides a measure of the corrective maintenance backlog. Corrective maintenance work is required when an equipment has failed or its failure is imminent and can no longer perform its design function. This indicator consists of all corrective work appearing in the work management system as uncompleted work at a specific point in time. This backlog provides a partial measure of the overall equipment reliability and a portion of the station equipment condition assessment. Each station should strive to manage this inventory of failed equipment as low as reasonably possible.

SPI 15 provides a measure of the deficient maintenance backlog. Deficient maintenance is planned when systems, structures, or components have been identified as degrading but still capable of performing their design function. This indicator consists of all deficient maintenance work appearing in the work management system as uncompleted at a specific point in time.

The deficient maintenance backlog, when combined with the corrective maintenance backlog, will reflect the overall material and equipment condition.

If deficient maintenance work cannot be executed in a timely manner, the equipment may fail, which results in the work becoming corrective maintenance work.

Because of this, stations should diligently strive to reduce the inventory of deficient maintenance to as low as reasonably possible as well.

Both corrective and deficient maintenance backlogs are constantly changing. It should be noted that the above two types of backlogs are reported by two component categories, being critical and non-critical component, which are defined by industry guidelines. Further detail on this concept will be provided in a later slide.

SPI 16 is the number of preventive maintenance deferrals. In some cases, plant conditions and resource loading make it impractical to accomplish preventive maintenance at the initially planned date. For example, some testing activities need the system or its supporting systems such as instrument air or electrical distribution to be in a certain operational configuration or the unit in a particular state, certain power level, or shut down. If such conditions cannot be met, the testing has to be deferred to another date.

Deferred preventive maintenance is preventive maintenance that has received an approved technical justification for extension prior to its late date. This SPI includes two indicators, one for critical preventive maintenance and one for total preventive

maintenance. The first reflects the plant's ability to maintain its most critical equipment, and the other is an indication of potential misalignment between maintenance staffing and the size of the preventive maintenance program. Therefore, this SPI provides a useful indication of the implementation of the station's preventive maintenance program.

The last indicator, SPI 18, is the preventive maintenance completion ratio. It is calculated as the ratio of the preventive maintenance jobs completed divided by the sum of preventive maintenance plus corrective maintenance jobs completed for all safety-related systems. The preventive maintenance completion ratio is used to determine the effectiveness of the preventive maintenance program.

For a sound preventive maintenance program for safety-related systems, a preventive maintenance completion ratio of 80 per cent is typical. An immature preventive maintenance program will inevitably lead to a higher number of equipment failures, therefore a higher percentage of corrective maintenance work. This will be reflected by a low preventive maintenance completion ratio.

All safety performance indicators are reported per unit at the end of each quarter.

The above four safety performance

indicators provide a comprehensive coverage for all corrective, deficient, and preventive maintenance work with no overlapping.

We would like to point out that the criteria for collecting SPI 14, 15, and 16 were adopted from the CANDU Owners Group Equipment Reliability Index guideline after they were reviewed and accepted for inclusion into REGDOC 3.1.1 in 2015. This guideline provides guidance to CANDU stations on the application and reporting of CANDU-specific equipment reliability using a standard methodology which allows for meaningful comparisons among CANDU units. This alignment with industry practice reduces the licensees' regulatory burden and requires the licensees to maintain a single set of data for these safety performance indicators.

We will now discuss the role of maintenance safety performance indicators in the overall plant maintenance assessment.

Maintenance safety performance indicators provide a measurement of the licensees' maintenance program performance to inform subsequent inspections or compliance assessments. These indicators are indications of potential problems in certain areas.

Major steps of assessing the maintenance indicators are as follows: After receiving the quarterly

report, specialists extract the data into a spreadsheet and calculate the quarterly average number for each indicator. The individual station level and trending will be compared with the overall industry level and trending to help determine if closer regulatory scrutiny is warranted. All data and the associated trends have been documented in e-access since 2015, when REGDOC 3.1.1 was implemented. This process is also peer-reviewed by a separate specialist.

It should be emphasized that there are no pre-determined limits for these indicators. As an example, based on the values and trending, CNSC might increase the focus on maintenance during regular system inspections or adjust the frequency of the baseline compliance program inspections or even conduct a reactive inspection or compliance assessment to verify the causes and determine the actual safety significance. Any finding will be communicated to the site inspector and regulatory program officer, who may further communicate with the licensee's staff to confirm the causes.

Two examples are given next to illustrate staff's review process of maintenance indicators.

Here, we see the first of two examples.

In 2017, CNSC staff observed an up trending of the critical deficient maintenance backlogs for

one of the stations, as can be seen in the chart on the left-hand side. The orange line represents the industry average, which can be seen to be trending down, while the blue line represents a specific station which can be seen to be trending up, signifying that there is a larger number of critical deficient maintenance work orders backlogged.

There was also a significantly higher number of critical preventive maintenance deferrals than the industry average, as can be seen in the chart on the right-hand side.

Here, the blue line representing the specific station's average number of critical preventive maintenance deferrals was consistently higher than the industry average, represented here by the orange line. This signifies a higher number of delayed critical preventive maintenance.

This table shows the same trend as in the previous slide, but in a different format which is currently included in the annual NPP Regulatory Oversight Reports.

Here, we can see that for SPI 14, the stations corrective maintenance backlog was at 10 in 2017, while the industry averaged five work orders in the backlog.

For SPI 15, the station's deficient

maintenance backlog was trending up and at 128 in 2017, while the industry averaged 118 work orders in the backlog.

And for SPI 16, the station's preventive maintenance deferrals was at 45 in 2017, while the industry averaged 20.

Adverse trends such as the ones shown here provide an indication of potential issues in implementation of the maintenance program.

In order to verify the causes and the safety significance of the issue, CNSC staff, including the maintenance and reliability specialists, conducted a focused review in 2017. The review found that up trending of deficient maintenance was partially due to the repeated degradation of certain equipment. The review also found that a lack of maintenance resources was one of the major causes of the high number of preventive maintenance deferrals.

As a result, an action item was raised to track the corrective actions required to address these two findings. The licensee has since provided periodic updates of the progress of these actions.

The actions to address the lack of maintenance resources has been closed in 2018 as the licensee has demonstrated adequate resources were in place to complete the maintenance work per the required

frequency. This has also been partially demonstrated by the trending down of the critical preventive maintenance deferrals. The actions to address the repeated equipment degradation are still open, since some actions haven't been fully completed.

The safety significance of this issue has been determined to be low. This is because the safety function of the related systems and components has been maintained. In addition, the reliability target for the systems important to safety has also been met.

This example illustrates the effectiveness of the Safety Performance Indicators as a tool to identify adverse trends and to understand their causes and safety impact.

It should be pointed out that overall the industry has made significant improvement for these Safety Performance Indicators, particularly for critical components. As such, the need to perform a reactive inspection or focused review as a result of an adverse trend has been infrequent.

To provide another example, CNSC staff noted that there was a significant reduction of maintenance backlogs and preventive maintenance deferrals for critical components at the end of 2017 for all stations. This can be seen from the trending shown here.

For each chart shown, the orange dots represent the industry average Safety Performance Indicator measurement for that quarter. For instance, in the chart in the middle we see that there is a significant drop in the critical deficient maintenance backlog between Q3 2017 and Q4 2017. Similar changes can be seen in the critical corrective maintenance backlog shown on the left-hand side and the critical preventive maintenance deferrals shown in the chart on the right-hand side.

This information was also included in the 2018 NPP Regulatory Oversight Report.

In the submitted quarterly Safety Performance Indicator reports, although the industry provided some information, CNSC staff wanted a full and detailed explanation regarding the changes in these indicators and its potential impact on the plant's maintenance program.

Staff raised an action item in May 2018 for all licensees to provide more detailed explanations for the reduction. Based on the responses received, the significant reduction was mainly due to the recategorization of critical components, which led to a number of work orders associated with critical components to be recategorized as non-critical maintenance work orders.

This was an industry-wide practice and not just in Canada. Industry confirmed that the change did not impact existing preventive maintenance tasks or their intervals and has no significant impact on the preventive maintenance program for the recategorized components.

In addition, maintenance performance indicators for non-critical components are also being reported in the quarterly SPIs and are monitored by CNSC staff.

Staff concluded that the component recategorization has negligible safety impact on the licensee's maintenance program at the current stage. If the licensee's resources can be more effectively managed towards critical components, staff believe that the overall equipment reliability could be further improved in the long run. Therefore, staff recommended closing this action item. Once again, this example demonstrated that a follow-up review has been promptly conducted to verify any sudden changes in these Safety Performance Indicators.

The previous example discussed the concept of critical versus non-critical components.

This slide gives further explanation of the relationship between critical, non-critical and safety-related components.

All components are identified as either

critical or non-critical, depending on the safety and operational significance of that component.

Safety-related, on the other hand, is a separate designation and is used to describe components that may potentially impact the radiological safety of the public or plant personnel under all plant states. As such, CNSC places increased regulatory oversight on these components.

As can be seen in the diagram here, it is possible to have safety-related components that are non-critical. On the same note, it is possible to have critical components that are not safety-related.

A component that is not important to nuclear safety can be defined as critical if its failure surpasses a certain production threshold. For example, the turbine generator bearings would not be identified as safety-related but would be identified as critical as failure of these bearings may lead to a turbine trip and result in significant production penalties.

We would like also to point out that recategorizing certain critical components as non-critical by industry does not affect the scope of safety-related components. The assessment performed by the CNSC confirmed that the maintenance program of safety-related components has not been impacted by this recategorization.

With that, I would now pass it back to Mr. Gerry Frappier for the concluding remarks.

Thank you.

MR. FRAPPIER: Thank you.

For the record, Gerry Frappier.

Based on the information presented, we can conclude that CNSC regulatory oversight of maintenance programs at NPPs is systematic, modern, responsive and transparent.

As noted, maintenance oversight is supported by three primary elements:

- Baseline and Reactive Inspections;
- compliance assessments of licensee submissions, including the REGDOC-3.1.1 quarterly SPI reports; and
- CNSC staff collaboration, surveillance and technical expertise.

With the robust processes in place, CNSC staff continue to conduct oversight of NPP maintenance programs as part of our Power Reactor Regulatory Program to ensure Canadian nuclear power plants are operated safely and in support of ensuring CNSC as a trusted regulator.

This concludes the overall presentation of the CNSC Regulatory Oversight of Maintenance.

We are happy to answer any questions that

the Commission Members may have.

Thank you.

THE PRESIDENT: Thank you very much for a very comprehensive and informative presentation.

We will take a five-minute break before we get to rounds of questions by Commission Members. So we will resume at 10:30.

Thank you.

--- Upon recessing at 10:22 a.m. /

Suspension à 10 h 22

--- Upon resuming at 10:29 a.m. /

Reprise à 10 h 29

THE PRESIDENT: Okay. Welcome back.

Let's start with questions from Commission Members.

We will start with you, Dr. McKinnon.

MEMBER MCKINNON: Okay. Thank you for including this topic. It is indeed very important and relevant.

So my --

THE PRESIDENT: Dr. McKinnon, you are on mute.

MEMBER MCKINNON: I'm sorry, I'm having a

technical issue here.

Can you hear me now?

THE PRESIDENT: Yes, we can.

MEMBER MCKINNON: Okay. I'm sorry.

My question is for CNSC staff and it is about change management.

So with the implementation of limited on-site oversight activities during the pandemic, has there been any assessment as to whether this has impacted the effectiveness of the inspections?

MR. FRAPPIER: Gerry Frappier, for the record.

Perhaps I will give a general answer to that and then maybe Yong Chang can speak a bit specifically to the maintenance.

So just to be clear, there have been some modifications to how we do inspections and of particular note for this one is, as was made during the presentation, usually we would have the maintenance specialist with us on inspections, but at this point in time they would provide that support remotely.

Having said that, all of the modifications to any of the inspections, including maintenance, goes through our quarterly risk-informed meeting where we look at all of the upcoming inspection plans and discuss any

kind of changes to ensure that any kind of risk change has been considered, and this would have been done as part of the QRIM process for the maintenance area as well.

But perhaps I could ask Yong Chang to talk about whether at this point in time he has any concerns with respect to the maintenance program and its modification under COVID and whether that has a risk aspect to it.

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

Yes. I just would like to add a bit regarding how we do the maintenance inspection under the current pandemic situation.

So just recently we had a remote type II inspection for the Point Lepreau station. So the experience I had is the entire inspection almost could have been done by remote support. We all have a setup like a different videoconference to discuss with site staff to verify something and also the site will scan the relevant documents/records for us to review. There was only one item which needed site verification and this will be done by the site inspector in their field inspection. So what I can say is there is very minimal impact on how we conduct the inspection under the current situation and it has been well communicated with the site inspector, also with the licensee as well. So we didn't see any major issue from a

maintenance perspective.

THE PRESIDENT: Thank you very much for that.

Dr. Lacroix...?

MEMBER LACROIX: Thank you very much, staff, for this presentation.

To pursue on the question asked by Dr. McKinnon, does CNSC staff foresee a growing maintenance backlog due to COVID-19?

MR. FRAPPIER: Gerry Frappier, for the record.

I would ask, again, for Yong Chang to provide what we are seeing right now with respect to any increase in maintenance backlog, but I think your question is more along do we predict this is going to become a problem given what the licensees are doing from a maintenance perspective.

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

From the information we observed so far, as we indicated in the slides, as we gather those quarterly SPI reports to us. So far we get the Q1 report and the Q2 report will be submitted to CNSC by the end of September, so it will come in soon. From the information I gathered, we didn't notice any trending up or adverse trending. That is first a good sign.

Second, as was also pointed out in the slides, the site inspectors keep monitoring those backlogs of performance indicators on a daily basis because they can directly assess the licensee's system, and if they observe anything they will typically immediately communicate to me. So we will either raise a question to the licensee or even have a -- like the example given, reactor inspection to focus the review. So, so far we didn't notice from our side.

MEMBER LACROIX: Thank you.

THE PRESIDENT: Maybe we can get the licensees to confirm it from their perspective.

Starting with Bruce Power, Mr. Burton, are you expecting an increasing trend in backlogs?

MR. BURTON: Yes. Maury Burton, for the record.

Good morning, Ms Velshi and Commissioners and CNSC staff.

From our point of view, we are actually seeing our backlogs being reduced over this time as we have a concerted effort to continue to drive those numbers down. There are some categories where the numbers have gone up slightly, but that is really due to equipment issues that come along. But overall, the backlogs are significantly down in our high priority areas.

THE PRESIDENT: Thank you.

From OPG, please?

MR. GRIFFITHS: Good morning. For the record, Mike Griffiths. I am the CFAM Maintenance Director for OPG.

So at our Darlington and Pickering plants, again, we have not seen an increase in our efficient and corrective backlogs. We continue to drive towards industry best and I am expecting both of our power plants will meet our targets for 2020.

THE PRESIDENT: Thank you.

And from New Brunswick Power, please?

--- Pause

MR. NOUWENS: Jason Nouwens, for the record.

Can you hear me?

THE PRESIDENT: Yes, we can.

MR. NOUWENS: Great. Thank you.

Similar to what you heard from the other utilities, we have actually seen a decrease this year in our backlogs. You know, our initial concern when we were in the initial stages of COVID was whether we could accommodate the extra safety precautions and still maintain our maintenance targets, but we have been able to do that with effective work practices.

So again, just to repeat, we have seen actually a slight decrease in our maintenance backlogs during this year.

THE PRESIDENT: Thank you. That is very reassuring from all three of you.

Moving on then to Dr. Berube, please.

MEMBER BERUBE: Thank you, staff, for that excellent presentation. Very thoroughly done and I am very happy with that.

I have a question for you relating to the station overall. Obviously, it's the reactor components which we are very, very concerned with, also the turbine operating system.

So when you are looking at the overall maintenance schedules, where do you delineate -- where do you say, well, we don't really need to look at turbine components versus reactor components or do you look at everything inside the fence per se within the station itself in total, because that is a sizable undertaking?

MR. FRAPPIER: Gerry Frappier, for the record.

So certainly we differentiate between the nuclear island and the balance of plant, as we call it, but I would ask Yong Chang again to perhaps describe a little bit how we discriminate between the two areas.

MR. LIU: Yes. Yong Chang Liu, for the record.

I think, as indicated in one of the slides, in the Venn diagram which shows the relationship of those critical/non-critical safety-related components, one thing we want to point out is, we -- CNSC does differentiate those based on their safety importance. So I think the example given on the turbine side is some of the turbine side components, they are very critical for the production but they either have very low safety significance or no safety significance at all. So this is why we show that diagram. And for the safety-related components, we also differentiate based on their safety significance. For example, for certain very high safety importance we put systems of importance to safety which we have a specific reliability program addressed by REGDOC-2.6.1 and they have to report their reliability and our availability on an annual basis for those specific systems. So this is a multiple level of hierarchy differentiation. But in general the answer is yes, we differentiate them and there is a specific system list being established by each station. And also we, as the CNSC, we do -- when we do the oversight for maintenance we may select which system to be inspected, we will base it on the safety significance to identify which one we will have

a look -- have oversight.

MR. FRAPPIER: Gerry Frappier, for the record.

If I could add. Of course, that is from our perspective, where our concern is nuclear safety, security and environmental protection.

The operators themselves of course would have a very significant interest in the maintenance associated with the operational parameters and what I would say is that given that we know they have an excellent maintenance program, and we are making sure that in general they have a solid maintenance program, I would expect they are using similar sort of techniques for the balance of plant, but you may want to ask them any specific details you might have.

THE PRESIDENT: Thank you. Well, maybe we will ask the licensees unless, Dr. Berube, you had a follow-up?

MEMBER BERUBE: Well, actually I was going to ask the licensees basically how they calculate plant reliability and where nuclear systems fall into that, because obviously CNSC has a more truncated list of variables that they are predominantly concerned in, but from an operator standpoint the plant output is really what is critical and so how do you delineate that?

And the second question is how do you track all that, because there have to be thousands of variables. Are you using AI or some system by which you can figure out where you are on a day-to-day basis from an overall safety reliability case and also a production reliability case?

THE PRESIDENT: Okay. Well, we will go to the licensees and maybe we will start with OPG. And on that same note, you know, congratulations on Darlington 1, Unit 1, that set the world record yesterday for continuous operation for a nuclear power reactor. I think it was 963 days and counting.

So maybe, OPG, you can try addressing Dr. Berube's questions, please?

MR. GRIFFITHS: Thanks. For the record, Mike Griffiths of OPG.

Thank you for the congratulations on the achievement at Darlington. Much appreciated.

I'm sorry, Dr. Berube, would you mind repeating the question?

MEMBER BERUBE: The question is basically, do you have processes in place that basically look at a safety case for liability overall in the plants versus production reliability and how do you discriminate between the two of them? Where are your cut-offs and where does

that data feed into CNSC data? So I just have some general sense of how all this is being put together and monitored by the management teams.

MR. GRIFFITHS: Yes. So we do have governance in progress to monitor safety and reliability. We have system health teams as well. So that's how we monitor.

THE PRESIDENT: And I am sure that's the same for the other licensees, but I will give you an opportunity if you want to add to what we have heard from OPG.

New Brunswick Power...?

MR. NOUWENS: Jason Nouwens, for the record.

Can you hear me okay?

THE PRESIDENT: Yes, we can.

MR. NOUWENS: Great. Thank you.

Well, I guess what I would add is, you know, from a safety and production point of view, we have a number of performance indicators that we track monthly -- in the area of 45 -- and each of those indicators gives us a different perspective on safety and production aspects and we track them very closely.

But one of the key ones is equipment reliability index, which is, you know, basically a nuclear

standard and in Canada we are all aligned that we use a consistent one through the CANDU Owners Group. That equipment reliability index factors safety system performance, reliability, planned outages, long-term plans that we have in place. It also factors in the health of all of our systems in the station and is really a very comprehensive indicator of how the station is performing overall from a reliability point of view. But that reliability factors in safety as much or more than production, because for any nuclear station the production side, even though it may be technically non-nuclear, it is very critical to the operation because any influence on the reactor needs to be carefully considered and planned. So we consider the whole station as having a safety connotation to the operation of the reactor.

THE PRESIDENT: Thank you.

And Mr. Burton, do you have anything to add?

MR. BURTON: Yes. Maury Burton, for the record.

The only thing that I will add is that we all do follow the WANO and INPO standards for maintenance as well, which categorize equipment from a Category 1, which is the most important, down to a Category 4, which is kind of a run to failure type of equipment. So there is

some risk based in there and when we do risk basing we not only look at the nuclear safety components, we look at production, we look at industrial safety, environmental safety, and whatnot.

And as far as risk goes, we also do have our equipment out of service tool which uses our probabilistic safety assessment so that when we do take equipment out of service we can look at the overall risk to the plant, both from a core damage and production risk point of view.

THE PRESIDENT: Thanks very much.

MR. FRAPPIER: Gerry Frappier, for the record, if you don't mind, Madam Velshi.

I would also like to, just in supporting or answering the question, note that we are not completely blind to the overall production capabilities, so there is a reporting requirement under SPI No. 11 associated with unplanned capability loss. So we are interested any time that there is a trip of the reactor, even if the cause is not nuclear safety maintenance area but is balance of plant, and we do get that information mostly for trending and for specific event review.

THE PRESIDENT: Okay. Thank you.

Dr. Demeter...?

MEMBER DEMETER: Thank you very much for

the relatively comprehensive, informative discussion.

I just had some curiosity on slide 25. At the bottom it says:

"...the criteria of collecting SPI 14, 15, and 16 were adopted from the Candu Owners Group Equipment Reliability Index Guideline... [to reduce the regulatory burden]."

Maybe put that in some context, what the criteria for collection means. It is not criteria for content or for expectations or for standards, but just for collection. Maybe put that into some context for me so I understand how that is achieved, whether the criteria for collection are vetted and approved by CNSC, although produced by COG. Help me understand that relationship and what that means. And I'm not sure -- go ahead, sorry.

MR. FRAPPIER: Yes. I was just going to say, Gerry Frappier, for the record, but actually I was going to turn that over to Yong Chang because that is a pretty specific question.

MR. LIU: Yong Chang Liu, for the record. I think just to give a little bit of history, when REGDOC-3.1.1 was published in 2015, at that time when we prepared documents we had a very, you know, in-depth discussion with industry and so the CNSC proposed

a number of new maintenance-related SPIs to be added. This one is partially based on the COG documents, because in the COG Equipment Reliability Index Guidelines there are a number of SPIs. Some of them we identify as safety-related, some of them are mostly production-related. So we, as a regulator, we screened out those that have no safety-related implication, which is the reason why we say with the criteria it is more how you define those SPIs and how you collect those SPIs. So the title of those SPIs was always short, but in terms of how to collect, these are pretty detailed criteria. For example, which work order should be included, which shouldn't, you know, and those are what we mean. We use the COG ERI Guidelines. We are not accepting all of those, we are only accepting those safety-related. And also it has been, you know, discussed very heavily internally and it also consulted publicly, for their comments, to confirm those are indeed safety-related and those can reflect the equipment condition for those safety-related components.

MEMBER McKINNON: Okay. That helps.

Thank you very much.

THE PRESIDENT: Dr. McKinnon...?

MEMBER McKINNON: Yes. Thank you.

I have a general question on maintenance. I'm not sure whether it would be best addressed by CNSC

staff or by the power plant representatives.

But maintenance really involves factors, many, many factors actually, such as probabilities of failure and consequences, but I imagine there are many custom components and systems in nuclear power plants and it's probably not that easy to know in advance what their reliability would be.

So how is the reliability of such components estimated and built into the maintenance plans?

MR. FRAPPIER: Gerry Frappier, for the record.

It probably would be good for industry to provide some insight into that and then perhaps afterwards staff can talk a bit about how we interpret that information.

THE PRESIDENT: Mr. Burton...?

MR. BURTON: Maury Burton, for the record.

I will start and let the other licensees supplement me.

The way that we do that is essentially through our reliability program. We actually do take the numbers from actual failures of components in the plant and feed them into the reliability model, and what we do is we use those numbers to develop our preventive and predictive maintenance programs in doing that.

One of the things that we are actually doing now is doing a lot more online monitoring of more critical equipment so that we can do the predictive maintenance piece of that a lot better, but from a preventive maintenance we are taking actual plant data.

There is actually a database -- I believe it was built through EPRI in the U.S. -- that we have been able to tap into and take actual component or like component data to estimate reliability and failure timing for that information. That information is shared amongst the industry. So we actually -- if we have like components within our stations, to get better failure data so that we can get a good preventive maintenance program, we take it from each other's stations so that we have a good -- or a significant amount of data to do that. And it's also built from, like I said, the industry in the U.S. as well. Others can tap into that.

MEMBER MCKINNON: Yes. If you have new or custom components or systems, how is that managed? You might not have data for that.

MR. BURTON: Maury Burton, for the record. For new or custom components, generally the custom components, we would do some estimation based on manufacturer's recommendations and that's how we would start and then as we get experience with that equipment, we

would adjust the preventive maintenance program to match actual failure rates.

One of the things that we also do when we do preventive maintenance, we do have a maintenance feedback form. So when we do have our maintainers go out, what we do ask them to do is fill out and say, okay, what condition was the equipment in when you actually did the maintenance. For example, if they were replacing an old ring, was it in pristine condition or was it very badly deteriorated and we can take that to our engineering folks, they do some analysis of that and they will adjust the frequency, depending on the condition of the actual equipment.

THE PRESIDENT: Mr. Nouwens...?

MR. NOUWENS: Thank you.

Jason Nouwens, for the record.

If I could add to what Maury said with respect to custom components.

One of the critical aspects that we do in our preventive maintenance is develop what's called a technical basis for our preventive maintenance. That assessment looks at a particular component, whether it is a valve or a pump or a solenoid valve, and in depth looks at the materials that it is constructed with, looks at the OPEX that we have from the industry -- and if it's a new

component maybe we don't have any -- but really analyzes that component and looks at every aspect of it that could degrade and the preventive maintenance tasks are tailored at preventing any degradation that is possible.

So, you know, if it is a custom component or if it is one we have, we use everything we have available to us to prevent the failure, if it's possible to do that.

So I think that that's -- I just want to highlight that that is I guess an important part of our prevention tasks, is to prevent any degradation on every component we have that is critical.

THE PRESIDENT: Thank you.

And, Mr. Griffiths, do you have anything to add?

MR. GRIFFITHS: Certainly. Mike Griffiths, for the record.

And again, just to add to Jason and Maury.

At OPG we have invested significantly in monitoring diagnostic systems. We use remote monitoring, predominantly through Wi-Fi. It enables our team at the M&D Centre to sometimes pick up degradation that isn't even possible to see in terms of control room observations. That enables us to preemptively address failures even before they occur. So that initiative is ongoing and we

are expecting a lot more investment and a lot more maintenance to be monitored -- or at least equipment to be monitored in our plants.

In addition to that, we are putting a lot of focus on condition-based monitoring as opposed to time-based PMs. So that allows us to monitor for example vibrations and filter Delta P's in the field, again, to allow us to replace parts before any failures occur.

THE PRESIDENT: Thanks very much for that.
Dr. Lacroix...?

MEMBER LACROIX: Thank you, Madame la Présidente.

I do have a few snappy questions for staff.

On slide 5 you talk about compliance verification plans. One is a five-year version and the other one is an annual version. So I was wondering, these plans must overlap with each other and is there some redundancy between these plans?

MR. FRAPPIER: Gerry Frappier, for the record.

Perhaps I will ask Ms Kim Campbell to explain a little bit how all that interaction works.

--- Pause

MR. FRAPPIER: If we are not able to hear

Kim, perhaps Lee Casterton could add to this then.

MR. CASTERTON: Yes. Lee Casterton, for the record.

So the five-year baseline plan is a plan that is established looking at all the inspections that need to be conducted on a five-year basis. Now, the annual plan is a subset of that. So taking into consideration everything the program needs to cover over the five years, you then develop your one-year plan. So in essence, once you have completed five years of annual planning you will have covered the entire baseline plan in that.

MEMBER LACROIX: Okay. Okay. That's good.

MR. FRAPPIER: Gerry Frappier here, if I could add.

So let's say that the overall strategy is that five-year plan and we are trying to do that for each one of the units or each one of the stations. However, what also has to be factored in are the actual activities going on at the station in any given time slot. So for that reason we have the site supervisors, who of course know what maintenance outages are happening, different activities that might be ongoing which could -- say we have an opportunity to do a certain inspection or perhaps say it's not a good time to do a certain inspection. So they

will do that detailed planning on an annual basis and all of that will be reviewed on a quarterly basis between our own inspection staff and the technical support folks to ensure that that is ongoing as necessary and any particular changes are reviewed on a quarterly basis to ensure that we are getting the coverage that we want.

At the end of the five-year period, or close to the end of the five-year period, let's say in year four, we start putting together the next five-year plan and we will take the lessons learned from what we have had so far.

MEMBER LACROIX: Okay. That's good.
That's good.

Another question. Slide 8 concerning the compliance verification criteria. It says that staff are conducting periodic inspections of containment components and I was wondering, does it include the components with pressure boundaries, that is, the primary heat transport systems?

MR. FRAPPIER: Gerry Frappier, for the record.

Certainly, overall containment is of interest, both structures, the civil structures themselves that play a part, and the pressure boundaries.

With respect to the pressure boundaries,

perhaps I would ask Mr. Blair Carroll if he wants to talk a bit about the inspections and maintenance associated with that.

MR. CARROLL: Blair Carroll, for the record, Specialist with the Operational Engineering Assessment Division.

With respect to the periodic inspection programs, we have two primary programs on the nuclear side of the plant, which is the N285.4 CSA standard program which covers the pressure boundary components --

MEMBER LACROIX: Okay.

MR. CARROLL: -- and the N285.5 program which covers the containment components.

MEMBER LACROIX: Okay.

MR. CARROLL: They are linked obviously to the maintenance program, but primarily the compliance verification of the periodic inspection programs is carried out under the safety -- or specific area periodic inspection and testing.

MEMBER LACROIX: Okay. Okay. That's great. Okay, you answered my question.

And the third and final question, on slide 21 you talk about the software maintenance for the nuclear power plant. Does it include the computational tools that are used to perform safety analysis as well?

MR. FRAPPIER: Gerry Frappier, for the record.

So obviously there is the software that is running plant equipment --

MEMBER LACROIX: Right.

MR. FRAPPIER: -- and that's important and that has quite a -- quite a strict set of quality controls around that.

And then I think you're making reference to perhaps modelling and various software that is used in support of safety assessments and --

MEMBER LACROIX: That's right.

MR. FRAPPIER: -- whatnot.

And so with respect to the -- to the maintenance of that software, I think I'm going to go to Yong Chang, but he may want to give it to somebody else. I'm not exactly sure who's our specialist in that.

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

For this particular software maintenance inspection, it does not include what you refer to as analytic or safety analysis software because those software mainly are used to support design analysis and --

MEMBER LACROIX: Okay.

MR. LIU: -- safety analysis which it belongs to another safety control area. And I believe

those software will be addressed by other inspection which will be reviewed by the safety analysis specialist and also the management system specialist.

For this software maintenance inspection, it's mainly looked at software being used in the plant for the real-time control, such as shutdown system and --

MEMBER LACROIX: Right.

MR. LIU: -- regulating systems.

MEMBER LACROIX: Okay, thank you. Thank you very much.

THE PRESIDENT: Dr. Berube.

MEMBER BERUBE: Yes, I have a question for CNSC Staff as it pertains to actual inspections, ongoing inspections, particularly as they pertain to maintenance in general.

And obviously there's a critical path in the maintenance -- maintenance philosophy at a nuclear plant that includes anything from planning to training to sourcing to actual inspection verification of equipment when it comes in, basic installation, verification of installation. All these factors come into this -- this area of consideration.

Now, with COVID-19 upon us, I would say your historical models are very, very good because you've had a long time to actually look at these and refine them

and verify them.

Are you actually looking at this critical path now in light of COVID-19 factors such as staffing issues, such as supply issues? How does that affect your modelling, or are you dynamically doing that now? Because it could very well be an issue if this is stretched out for a period of time.

MR. FRAPPIER: Gerry Frappier, for the record.

Before I give to Yong Chang for maybe specifics around maintenance and perhaps Mr. Ed Leader for a site view, if you like, on the ground and industry may want to comment as well, from my overall perspective, we do have requirements, program requirements in all of those areas that you mentioned, although they may not be called maintenance.

You talked about training, you talked about on-boarding of new staff and equipment design reviews and that.

We have not relaxed any of our requirements because of COVID-19. There is a necessity for the licensees' programs to be fully operational, fully functional.

We haven't had requests from the licensees to have any kind of lenience applied or some kind of

reduction due to COVID-19, so I would say at this point in time what we're seeing is licensees are perhaps making some detailed modifications and adaptations and, like I said, they might want to speak to that.

But from an overall regulatory perspective, all the regulatory requirements are being met, need to be met and if they are not going to be, then they would have to have come to us and looked for certain privileges or exemptions.

The only one I can say that we did get was with respect to some of the timing of recertification requirements where it was right in the middle of COVID and they asked for six-month extension to certain certifications of personnel, which we were able to do. But generally speaking, all the requirements must be met.

Perhaps with respect to maintenance, Young Chang, you might want to add to that.

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

Yes. I think first is -- I think as we explained in the presentation is maintenance program are interfacing and also supporting many other programs.

Now, when we -- a general way to respond to your question is most our, you know, requirements is performance based, so we are not getting into the details of licensee how to operate those program. We are

considering the performance result so whether, for example, whether reliability target, the availability, you know, target have been met and whether those risk has been managed well and also the defence-in-depth has been maintained.

So for all those program, this is the overall CNSC approach. We are trying to use the risk-informed performance based criteria without prescribing how the licensee are doing those. And so this is a general way and this is also how we apply to the maintenance when we do the inspection, when we're monitoring the SPIs. Those are the criteria created to assess whether they are acceptable regardless whether there is a pandemic or not.

So I think, as Mr. Frappier said, probably some site inspections and also licensee to give a bit more from their perspective.

Thank you.

THE PRESIDENT: Thank you.

Dr. Berube, would you like to hear the licensees' perspective?

MEMBER BERUBE: I think it'd be useful to hear what they're experiencing, if there's any significant changes in their sourcing, for instance, or staffing availability or issues with this.

Certainly as COVID continues, I suspect some of those things may come. They may not be here yet and they may not come at all, but if we could get some feedback from the operators, that'd be fine.

THE PRESIDENT: Okay. Let's start with Mr. Nouwens, then, please.

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

Thank you for the question and the opportunity elaborate a little bit.

You know, to try to generalize or keep it high level, we've definitely seen some changes and continue to see those, but, you know, we've had to really hone in on what is critical for our operations. And you know, from a supply chain point of view, from a personnel point of view, from a daily work function point of view, even from a screening point of view, we've had to put a greater focus on those activities that are -- that are critical and those activities that are supportive of our general operations and those activities that are nice to do and make sure that we're keeping the focus on the critical aspects.

So you know, the COVID response, I guess, has forced us to put a greater focus on those aspects that are critical. It's forced us to have deeper engagement with our suppliers and with the critical aspects of our

organization that we need to ensure safe and reliable operation.

But overall, we've been able to overcome the challenges that, early on, we thought would be significant and, you know, at times felt sort of daunting on how we're going to accomplish this, but we've been able to implement new work practices, new safety protocols, new working arrangements with suppliers, including deliveries to site and personnel that needed to the site periodically.

We've been able to implement, you know, additional work procedures to make sure that we keep everybody safe and I'm happy, I guess, to report that we've been able to maintain our station functions as normal. And you know, it's a new normal, but we, at this point, are able to maintain our operations and functions of the station in a very similar manner than we did in the past.

It looks different, it feels different, but from a -- from a capability of doing what needs to -- what we need to get done day to day and week to day, we've been able to raise our bar back up to what our -- what our previous expectations on performance would have been.

THE PRESIDENT: Thank you.

Mr. Griffiths.

MR. GRIFFITHS: Mike Griffiths, for the record.

Yeah. Very similar to what Jason just -- just alluded to, our focus has been very much on continued safe operation. We're not relaxing any standards. We have not reduced any targets and we still intend to meet those targets this year.

Our plan performance has remained strong and, as Jason alluded to, there's been tremendous challenges for -- for the staff across the fleet. We've overcome those challenges successfully, managed to contain any suspected cases of COVID and, in fact, we haven't had any infections, so we're happy with the way that our fleet is performing and will continue to focus on this.

Obviously, if the pandemic gets worse, then we have to look at more long-term planning, but we have teams that are looking at that right now.

THE PRESIDENT: Thank you.

And Mr. Burton.

MR. BURTON: It's Maury Burton, for the record.

Similar to the other utilities that -- we're obviously monitoring the ongoing situation. As far as our current situation, we kind of look at it as a steady state.

One of the biggest challenges for us is physical distancing with all the work that we have going on

site, so folks like myself will be working from home for the rest of the year. People that are actually supporting or directly supporting operations projects and outages, those type of things, are going back to site in a phased approach. And obviously, our compliment to maintenance staff, who have always been there.

As far as supply chain goes, we do have a team similar to other -- the other utilities that is looking at that.

One of the first things that happened when the pandemic was announced here in Ontario, at least, was the electricity sector was declared an essential service, so that did allow us to help get our suppliers declared essential services as well, so we didn't see a huge impact in the supply chain because of that because we could people at work and getting those products that we needed that were essential to our operation.

Ongoing, we are monitoring this, have teams in place, and we are working with the other utilities, of course. There is a COG working group that is looking at COVID impacts, that looks at these type of things, too, so that we can work together in the event that we do have a second wave.

And the only other thing that I'll add is we are taking industry OPEX as well. There were a couple

of significant events early in the pandemic in the U.S. where outages and the new build project were actually shut down because of large COVID impacts at both sites and we've taken those -- those experiences and taken the lessons learned from those and built them in to when we are bringing folks on for outages and for ourselves and OPG, our refurbishment project.

So I think we're actually in pretty shape at the moment, but it's -- it's constant monitoring to ensure that we're looking ahead at all times so that we can continue to get the -- not only the staff that we need, but the supplies that we need as well.

Thank you.

THE PRESIDENT: Thank you.

MR. FRAPPIER: Gerry -- oh.

THE PRESIDENT: Yes, Gerry.

MR. FRAPPIER: Sorry, Madam Velshi.

I was just going to say that perhaps, you know -- as usual, you know, the licensees have presented their case. What I was hoping is that perhaps Mr. Ed Leader could tell us a little bit from a CNSC inspection perspective what we're seeing since we are the plants and see how this COVID-19 is affecting any of the areas that we're talking about.

So Ed, perhaps you want to make some

comments?

MR. LEADER: Ed Leader, for the record, Power Reactor Site Office Supervisor at the Pickering nuclear power plant.

Thank you for the opportunity to speak.

As you know, the pandemic has raised many new challenges, but I believe CNSC power reactor regulating program staff with IT support have raised -- have raised to meet the challenge and adapted our processes to continue to fulfil our mandate.

CNSC has completed and are continuing to conduct outage inspections, our quarterly field inspections on site as required and many of our program inspections, including maintenance-related, safety-related and special safety system inspections.

They're also in progress with the support of the SMEs remotely.

Site staff conduct most of their administrative activities from their home to reduce the overall exposure of staff to other individuals.

We have and can confirm the licensee's position that they've been able to continue operating and maintaining the plants within the safety limits, design limits and staffing levels. No major maintenance activities have been curtailed other than the major

component replacements and refurbishment projects.

All other planned outages have been conducted and there has even been some unplanned outages executed to address equipment issues that the CNSC has monitored.

We do continue to do daily surveillance remotely using access to the licensee's network and virtual attendance at most of the plant -- licensee's plant meetings as identified by both Mr. Frappier and Mr. Casterton earlier.

So in conclusion, we can say that by modifying our compliance processes and Pre-Job Brief in response to the pandemic, we've been able to effectively fulfil our mandate and manage the risks to staff, their families, industry workers, the public and the environment.

THE PRESIDENT: Thank you very much for that, Mr. Leader.

Do you get more access now to the licensees' databases or access to attend meetings than you did prior to the pandemic?

MR. LEADER: Ed Leader, for the record.

I would say that when we're in the site offices we had licensees' computers available to us. They gave us full access to all their programs and databases.

We were working already on getting remote

access through key fobs.

What I would say is we've actually found ways to use that data better. For example, our control room inspection, we've been able to use performance indicator data, P.I. data (Plant Information System data), to conduct our control room inspections without actually going there, so it would be a yes.

THE PRESIDENT: Thank you. Thank you for that.

Then moving to Dr. Demeter.

MEMBER DEMETER: No further questions. Thank you very much.

THE PRESIDENT: Okay. Let me just quickly go through and see if anyone's got any residual questions.

Dr. McKinnon?

MEMBER MCKINNON: No further questions either.

THE PRESIDENT: Dr. Lacroix?

MEMBER LACROIX: I have no further questions.

THE PRESIDENT: Dr. Berube?

MEMBER BERUBE: I'm fine. Thank you very much.

THE PRESIDENT: Okay. And then maybe last round from the licensees.

CNSC Staff concluded their presentation that the regulatory oversight of maintenance programs is systematic, modern, responsive and transparent. Do you agree with that or are there other perspectives you want to take this opportunity to share with the Commission?

And I'll start with Mr. Griffiths.

MR. GRIFFITHS: Yeah. Mike Griffiths, for the record.

No, I agree with those comments. I have no further input for that.

THE PRESIDENT: Thank you.

Mr. Burton?

MR. BURTON: Maury Burton, for the record.

Yeah, I agree with it. Obviously COVID has introduced some challenges for CNSC Staff and I always personally like that the specialist staff come to site from Ottawa to see and get the feel for what's actually happening on site, but we are making the best of the situation and I think it's working quite well with the current arrangements that we have.

Thank you.

THE PRESIDENT: And Mr. Nouwens.

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

Yeah. Yes, I agree with the perspectives

that were shared today, definitely.

THE PRESIDENT: Okay. Well, thank you again, CNSC Staff and licensees, for an extremely valuable, informative session, and I hope we get similar ones for some of the other areas that we look at.

We will now take a break and be back at 1:30 p.m. for the presentation of the annual report on the Designated Officer Program for 2019.

So we shall see you then. Thank you.

--- Upon recessing at 11:18 a.m. /

Suspension à 11 h 18

--- Upon resuming at 1:28 p.m. /

Reprise à 13 h 28

THE PRESIDENT: Welcome back, everyone, and good afternoon.

And resuming with our Commission meeting, the next item on the agenda is the Status of the Designated Officer Program for 2019 as outlined in CMD 20-M26.

Ms. Kelly McGee, I'll turn the floor over to you for the presentation.

MR. LEBLANC: Kelly, I think you're frozen, so maybe try without the video. If not – no, that's the one, so but we can ask Monica or Waleed to just

get us started.

Monica will get us started while Kelly gets the technical issues resolved.

Merci, Monica.

Monica Hornof will be speaking.

CMD 20-M26

Oral presentation by CNSC staff

MS HORNOF: Good afternoon, President Velshi and Members of the Commission.

My name is Monica Hornof, and I'm the lead Commission technical officer in the Secretariat. And with me today I have Waleed Khan, Commission technical support officer and Kelly McGee, assistant Commission secretary.

Today we will be presenting the report on the Status of the Designated Officer Program for 2019. Designated officers are also referred to in this presentation as DOs.

Also with us today and available to answer your questions are senior staff from CNSC's Technical Support Branch and Regulatory Operations Branch together with DOs from several directorates in these branches.

The implementation of the DO program is a collaborative undertaking between the directorate of

Regulatory Improvements and Major Projects Management, Legal Services, and the CNSC Secretariat.

The DO program was first established in 2000 with the coming into force of the *Nuclear Safety and Control Act*, also referred to as the NSCA. The NSCA allows the Commission to designate certain CNSC staff as a designated officer and the Commission's individual designations set out the activities authorized by the Commission.

At the CNSC, each authorization granted by the Commission designates both the staff position by title and the specific duties that the DO is authorized to carry out. It is section 37(1) of the NSCA that authorizes the Commission to designate DOs, and subsection 37(2) lists the duties that the Commission may authorize a DO to carry out. In addition, the Commission may designate DOs under section 65.01 of the NSCA. This is specific to administrative monetary penalties, also known as AMPs, and will be discussed later in this presentation.

The Commission has not authorized DOs to carrying out licensing activities for Class I nuclear facilities, Class IB facilities, or for uranium mines and mills. This authority remains solely with the Commission.

DO activities that may be authorized by the Commission include licensing, certification, and

compliance decisions. DOs may be authorized to make licensing decisions for the use of nuclear substances and radiation devices, the operation of a Class II nuclear facility, the transport of nuclear substances, and the import and export of controlled nuclear substances, equipment, or information.

Certain DOs are authorized to carry out the certification and decertification of Class II prescribed equipment and to certify or decertify personnel. The certification of prescribed equipment includes the certification of transport packages, tele-therapy machines, and lower-energy medical and linear accelerators.

Personnel certification includes the certification of exposure device operators, Class I nuclear facility personnel, and Class II nuclear facility radiation safety officers.

Compliance decisions allow DOs to make any order that an inspector can make. A DO may also be authorized to confirm, amend, revoke, or replace an inspector's order and issue and review notices of violation associated with administrative monetary penalties.

A DO carrying out any authorized activity has the same responsibilities and obligations as the Commission, including independent decision-making free of outside influence and ensuring procedural fairness and

impartiality.

As shown by the graphic in this slide, DO powers are allocated in a pyramid style to ensure the continuity of operations, since DOs are designed by title of office and therefore not transferable between CNSC staff. Should an individual DO leave their position, then a more senior DO within the directorate is authorized to carry out the same activities.

As shown, vice-presidents have all of the DO authorities of the directors general in their branch, and the directors general have all of the authorities of directors in their directorate, and so on. Generally, the scope of a DO's authorized duties reflects seniority, experience, and the responsibilities of the designated position.

I will now pass the presentation over to Waleed Khan.

It appears that we're having some technical difficulties. Waleed, you're muted.

MR. KHAN: Hi, can you hear me now?

MS HORNOF: Yes.

MR. KHAN: Sorry about that. I was unable to unmute myself.

Good afternoon, President Velshi and Members of the Commission. My name is Waleed Khan, and I

am a Commission technical support officer with the CNSC Secretariat.

The Commission has designated 34 staff positions by title of office to make DO decisions.

One moment, please. I'm just going to fix my slides. Perfect, there we go. I'll start again.

Good afternoon, President Velshi and Members of the Commission. My name is Waleed Khan and I am a Commission technical support officer with the CNSC Secretariat.

The Commission has designated 34 CNSC staff positions by title of office to make DO decisions. Twenty-three of these DO positions are in the Regulatory Operations Branch, while 11 positions are in the Technical Support Branch. These positions are spread amongst seven CNSC directorates.

As can be seen in the chart, the Directorate of Nuclear Substance Regulation has the most DOs, at 14. The directorate carries out many of the licensing and compliance activities for medical and research facility licensees, nuclear substance and radiation device licensees, and transport licensees. In fact, the Directorate of Nuclear Substance Regulation's DOs' activities make up a large part of the DO program, making it a key component of CNSC's licensing and

compliance framework.

THE PRESIDENT: Mr. Khan, I don't think your slides are in sync with your speaking remarks. So you should now be on slide number six. Okay.

MR. KHAN: There we go.

Due to retirements and some CNSC staffing changes, there were three position staffing changes in 2019. Additionally, the Commission designated three additional DOs in September 2019. One designated officer was designated in the Accelerators and Class II Facilities Division, and two designated officers were designated in the Personnel Certification Division. These were requested by CNSC staff due to a high volume of applications requiring DO approval and also to allow for flexibility when certain DOs are out of office.

When a new DO is designated by the Commission, they are required to undertake the DO training and assistance program, which includes a briefing with the CNSC senior general counsel on the legal considerations in DO decision-making and the legal obligations of a DO; a briefing with the Commission secretary on procedural aspects of DO decision-making; and a briefing with a representative from the Directorate of Regulatory Improvements and Major Projects Management, which coordinates and implements the day-to-day programs for the

DOs at the CNSC.

There are two sections of the NSCA which form the statutory basis of CNSC's DO program. Section 37 authorizes the Commission to designate DOs and also outlines the authorities that the Commission may grant DOs. Section 65.05 of the NSCA is specific to notices of violation and administrative monetary penalties and allows for the Commission's authorization to permit DOs to issue notices of violation.

The Secretariat maintains a master DO list which details the list of designated DO positions as well as the statutory authorities that the Commission has granted specific DOs to carry out. A summary of the Commission-designated DO positions and their authorities is available in Appendix B of this presentation.

This table provides an overview of the DO authorities carried out under subsection 37(2) and section 65.05 of the NSCA during 2019. Appendix A of this presentation has details about the specific authorities provided for by the NSCA.

The data presented in this table is broken down by directorate and division. In total, designated officers carried out 3,499 authorities in 2019.

It should be noted that the Directorate of Nuclear Substance Regulation tracks its DO decisions by the

division for which the decision was carried out, including those made by the director general. As such, any decisions that the director general may have made under paragraphs 37(2) (a) to 37(2) (d) of the NSCA would be reflected in the statistics for the specific division. This is marked through the asterisks.

This table provides the number of DO authorities carried out by year from 2017 to 2019. It should be noted that there was no data reported for the Canadian Nuclear Laboratories' Regulatory Program Division in previous years, as this division was only formed in 2018.

As in previous years, the Directorate of Nuclear Substance Regulation, the Directorate of Safety Management, and the Directorate of Security and Safeguards carried out the majority of the authorities in 2019 -- more specifically, 3,456 authorities. Forty-three of the authorities were carried out by the five remaining directorates or branches.

It is important to recognize that, although three directorates carried out the majority of the authorities, this should not be taken as an indication that DOs are not required in other directorates. The DOs in those directorates are authorized to carry out specific authorities that are unique to their expertise in those

directorates, such as return to work authorizations by the Radiation Protection Division and compliance activities for facilities within the mandate of the Directorate of Nuclear Cycle and Facilities Regulation.

Pursuant to subsection 37(5) of the NSCA, certain DO decisions, such as those that may have a substantive impact on licensees or applicants that deal with more safety-significant issues or may give rise to an opportunity to be heard or an appeal, need to be reported to the Commission. These DO decisions include licensing refusals; the issuance of a licence that contains a condition that the applicant provide a financial guarantee; the renewal of a licence with a change in licence conditions or a licence suspension, amendment, revocation, or replacement without a licensee's consent; and the confirmation, amendment, revocation, or replacement of an inspector's order.

The information in the next two slides represents a complete and formal fulfillment of the statutory requirement to report to the Commission on specific DO decisions pursuant to subsection 37(5) of the NSCA.

Of note is that Commission members do receive timely information on the higher-risk decisions or decisions that may necessitate the Commission's review

through the Commission secretary.

Designated officers made 97 decisions that were reportable to the Commission in 2019. Specifically, designated officers renewed two licences with amended licence conditions for licensees within the mandate of the Directorate of Nuclear Cycle and Facilities Regulation. There was a refusal to issue an export licence within the Directorate of Security and Safeguards, and one refusal to transfer a licence within the Directorate of Nuclear Substance Regulation. Additionally, designated officers made 12 inspection order confirmations in 2019, all within the Directorate of Nuclear Substance Regulation. More information on these decisions is available in Appendix D of this presentation. Finally, designated officers in the Directorate of Nuclear Substance Regulation issued 77 licences with a financial guarantee in 2019, and the Directorate of Nuclear Cycle and Facilities Regulation issues two licences with a financial guarantee. To be noted is that these numbers include only licences that were issued by DOs pursuant to subparagraph 37(2)(c) of the NSCA.

In November 2018, a designated officer refused to renew an individual's exposure device operator certification. An opportunity to be heard was provided prior to the issuance of the refusal, but the individual

did not respond. This matter was brought forward to the Commission in December 2018, when the individual appealed to the Commission that it redetermine the decision taken by the designated officer. Both the individual and the designated officer were required to file written submissions and participate in an oral hearing on June 11, 2019. Based on the evidence presented on the matter, the Commission, as a panel of one, confirmed the designated officer decision refusing to renew the individual's exposure device operator certification in July 2019.

Although this event was not reportable to the Commission pursuant to subsection 37(5) of the NSCA, this event is an example of how a particular decision made by a designated officer may be redetermined by the Commission.

Section 65.05 of the NSCA permits designated officers to issue notices of violation and associated administrative monetary penalties to persons who commit a violation. AMPs can be issued to an individual or a corporation. The Commission has authorized designated officers in the positions of director general and above to issue AMPs. In 2017, CNSC designated officers issues seven AMPs. In 2018, three AMPs were issued by the Directorate of Nuclear Substance Regulation, and there were zero reported AMPs issued by DOs in 2019. The CNSC's public

website has a comprehensive regulatory action page which provides the public with details in regard to the issuance of AMPs.

In order to support continuous improvements in designated officer activities, knowledge management, and collaboration, the first annual DO Forum was held in April 2018, and the second forum was held in May 2019. The 2020 Designated Officer Forum was delayed due to COVID-19 and has been rescheduled to take place virtually this fall.

These forums provide designated officers with legal and procedural refreshers, case studies, and an opportunity to discuss best practices with one another. Feedback from Designated Officers following the forum indicated that it met its goal to bring Designated Officers together to share knowledge, experience and expertise.

The second forum added an additional component, including a practical small group activity which led to valuable and engaging group discussions.

Feedback from the second forum indicated that Designated Officers especially enjoyed the case studies and that future forums should include more time for group discussions.

The forum organizers are working to organize a third forum, planned for this fall.

I will now pass the presentation back to Monica Hornof to finish up with some key DO Program improvements.

MS MCGEE: Good afternoon, President Velshi and Commission Members.

Let me start by thanking Monica and Waleed.

For the record, my name is Kelly McGee and I am the Assistant Commission Secretary in the Secretariat.

As mentioned, the key DO program partners include the Directorate of Regulatory Improvement and Major Project Management, Legal Services and the Secretariat, and we all work together to ensure the training of new and existing DOs and continuous improvement in areas such as available resources, working instructions, process documentation, DO briefings and knowledge-sharing.

Changes have been made to documentation in respect of the issuance of DO orders and also in the confirmation, amendment, revocation and replacement of inspector orders.

DOs also receive in-class training for the issuance of orders and have access to the support of legal services whenever needed.

Another example of the commitment to continuous improvement. It was identified in 2020 that

there were opportunities to improve the tracking process for DO authorities to ensure a consistent approach across Directorates. It is expected that a revised process for tracking the number of DO authorities carried out will be implemented prior to the next Status Report to the Commission on the DO Program.

This year's DO Forum will be conducted virtually, as Waleed Khan mentioned, and the planning is well underway to transform what has in the past been an in-person learning opportunity into a program that delivers excellent content and engagement.

CNSC staff are looking to the work done in preparation for the Commission's June and September proceedings to avoid any technical difficulties, maximize virtual collaboration and avoid screen fatigue.

In recognition of the changes needed to host this year's DO Forum, two half-day sessions are planned in October. A draft agenda for those sessions can be found in Appendix E of this presentation.

On the slide you have in front of you is a screenshot from the CNSC's internal website that shows the DO community webpage. This resource provides information to help DOs perform their duties and includes work instructions, process documents, templates and references. This resource is updated to ensure that DOs have the

information that they need to effectively carry out their statutory authorities.

Other tools available through this site include process documents, case studies reviewed during previous DO Forums, legal principles and links to additional resources that DOs may find useful in the course of exercising their authorities. Links to past DO Forums through this page include access to all the subjects discussed at those meetings.

While this report to the Commission is focused on reporting on the status of the DO program for 2019, CNSC staff wish to also take this opportunity to recognize and describe some of the changes that were implemented as a result of COVID-19.

As was mentioned to you this morning in another presentation, the CNSC's business continuity plan was activated on March 15th of 2020, and this meant that all CNSC staff, including Designated Officers, were required to work remotely.

All CNSC staff, including DOs, received the technology they required to continue effective regulatory oversight after March 15th. With these tools in place, DO authorities are now carried out electronically, and the support of Legal Services, the Commission Secretariat and the Directorate of Regulatory Improvement

and Major Project Management continue to be available as before.

In 2020, there were also several changes in DO positions and a designation of an additional Designated Officer in the Non-Proliferation and Export Controls Division of the Directorate of Security and Safeguards. As a result, all documentation, training materials and virtual briefings were carried out through electronic means.

In conclusion, although there have been significant changes to how the CNSC provides regulatory oversight as a result of COVID-19, Designated Officers continue to carry out their authorities in accordance with the designations granted by the Commission and the standards of impartiality, independence and fairness required of them.

So, to summarize, in 2019 DOs carried out a total of 3,499 authorities. Appendix C of this report provides a breakdown of the DO authorities carried out in 2017, 2018 and 2019.

In accordance with subsection 37(5) of the *Nuclear Safety and Control Act*, 97 of the 2019 DO decisions are reportable to the Commission and are summarized in Appendix D, while the remaining 77 licensing decisions, as Waleed mentioned earlier, were licences with financial

guarantees issued by the Directorate of Nuclear Substance Regulation.

There were also 12 DO decisions on Inspector Orders in 2019 and these are summarized on Slide 36 of Appendix D.

A commitment to continuous improvement in the DO program, collaboration between the many areas of the CNSC and agility in response to COVID-19 challenges, the DO Program continues to be an effective and key component of the CNSC's licensing and compliance framework.

As was mentioned at the start of this presentation, we have CNSC staff, including those in Designated Officer positions, available to answer your questions.

Thank you.

THE PRESIDENT: Thank you very much.

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

MEMBER LACROIX: Well, thank you very much for this presentation. It is very interesting.

One thing that still is mysterious to me is could you tell me more about the training of DOs? How are they recruited? How many hours of training do you need to become a junior DO? Is it a lifetime training? Do they

have to write exams? Do they have a licence which is renewed on a regular basis? So tell me more about what is a DO, where they come from and how they are trained.

MS MCGEE: Thank you very much for the question.

Kelly McGee, for the record.

I will ask Hugh Robertson, the Director General from the Directorate of Regulatory Improvement and Major Project Management, to start with an answer to the question.

MR. ROBERTSON: Hugh Robertson, for the record.

Yes, there is a formal program that is signed off that consists of a number of different facets, including a formal designation and document, but I will pass it on to Ms Panichevska who can detail the exact steps and how we maintain that through our forums, et cetera.

MS PANICHEVSKA: Oh, hello. Thank you, Hugh.

For the record, it's Tetyana Panichevska, Senior Project Officer for the Directorate of Regulatory Improvement and Major Projects.

As Hugh mentioned, we do have a formal program for training and it includes several aspects, particularly briefings with the Legal Services, Secretariat

and the Directors of Regulatory Improvement and Major Project Management. During those briefings necessary information related to that is provided and questions are answered.

Also, in addition to that, we have -- a part of the training program is the self-learning, which means that you are required to become familiar with all the procedural documents related to the authorities. And also a very important part of the training program is communication with more experienced DOs so that knowledge and experiences can be shared. All that training is required to be completed before you will make decisions and, in addition to that, the Legal Services and Secretariat and Operations is always open to further questions.

I just wanted to clarify that the training program, even though it is strongly supported by the senior management, so CNSC senior management strongly recommends it be done, it is not a statutory requirement. So once you become a DO through the issuing of the licence, which is done by the Secretariat, they can exercise their authority.

Answering your questions about exams, there are no exams per se after the training, but there is a record of training being completed and it is submitted to the Secretariat and the Secretariat is keeping records of

that in the file, in the DO master file.

We also have -- for the DO orders, we have in-class training, which is a half-day or a day in length, depending on how often you issue those decisions, and that is really a comprehensive training. So any individual with that authority is going through that training where Legal Services and -- where Operations and Legal Services answer all the questions and so far we have heard very positive feedback, meaning that the training program overall is robust and very helpful for DOs to execute their authority.

THE PRESIDENT: Thank you.

Dr. Berube...?

MEMBER BERUBE: Just in that ilk, I would like to know basically how long does it take you to find and train and certify a DO? If you had to start today and produce a finished product that was capable of operating independently, approximately how long does that take?

MR. ROBERTSON: Hugh Robertson, for the record. I guess I can jump in.

Just to clarify that we don't select them per se. In most cases it's the position they occupy and of course that has gone into part of the selection process, you know, understanding that they will need to exercise the authorities of a DO. That is generally how it works.

And then for the exact period of time, how

long that takes, again I will refer that to Ms Panichevska.

MS HORNOF: This is Monica Hornof, for the record.

Can I please answer to wrap this up a bit.

So when we showed you the pyramid and the DO positions that the Commission has approved, those DO positions are positions which the Commission has decided are qualified personnel to be carrying out those authorities. And the number of authorities and the type of authorities that each position has is reflective of the experience, knowledge and the breadth of what they do in their day-to-day operations to be carrying out those authorities. So, as you see, a Director General has more authorities than somebody in a Project Officer position, because when they come into that position they have more experience and knowledge going into it.

Now, in respect of the training, it is true that once they have received their DO certificate they are able to carry out authorities as required. However, the CNSC, through its DO training program, does ensure that the DOs have peer-to-peer experience, have the training and sharing of knowledge amongst peers, to ensure that they understand what decision-making they are going to be doing. But once they have that certificate, it is -- the NSCA has given the Commission the authority to qualify those persons

as DOs.

Thank you.

THE PRESIDENT: So how long is the formal training program element, the classroom training?

MS HORNOF: Monica Hornof, for the record. So there isn't any formal classroom training per se. The training program basically entails the briefing with the Senior General Counsel to give DOs information on their legal requirements, making DO decisions, and to respect independence, impartiality, the same as the Commission would in their decision-making.

They meet with the Commission Secretary as well to discuss the DO position and the carrying out of authorities. And they also meet with DRIMPM to understand what training programs are available to them.

If a DO is authorized to make orders, there is a training program to help DOs understand how orders are made and the process involved, because there is a process in reviewing the orders and then it could be moved to the Commission. And in that training program administrative assistants are also given some training so that they understand how to best support their DO in terms of the administrative tasks required in the making of orders.

But I actually would like to pass to Karen

Owen-Whitred, who has recently gone into a Director General DO position and just two years ago she moved into a Director DO position, just to give us a little bit of information on how she carried out her training.

MS OWEN-WHITRED: Thank you.

For the record, my name is Karen Owen-Whitred, I am the Director General of the Directorate of Nuclear Substance Regulation.

As Monica said, about two years ago I joined a position within that same Directorate, in Transport Licensing. That was my first experience as a Designated Officer.

I would say it took me on the order of one month to complete all of the steps that Monica and Tetyana have already described and that's just a factor of scheduling and timing when I was able to book the different meetings that have been described already.

That being said, because there were two other Designated Officers at the staff level already in that division, I chose to take a few more weeks on top of when I -- I already had my certificate. Therefore, I was authorized to make the decisions. I had completed the training. Therefore, I felt prepared, but I did want a little bit more time to feel comfortable in that position and to observe some of the decisions that were made by the

other DOs in that division before I took the first decision that I was authorized to take as a Designated Officer.

Now that I have just recently become the Director General in that Directorate, I have those two years of experience already. Now, I am authorized to make some additional types of decisions that go along with this position. So I am going through all of the same training again, but I feel that the time taken between joining this position and making my first decision as a DO would be shorter than it was in that earlier round.

THE PRESIDENT: Thank you. That is very helpful.

Dr. Demeter...?

MEMBER DEMETER: Thank you very much. Very informative.

The epidemiologist in me always looks at trends and there was an interesting trend with regard to AMPs. From three years we got three data points, so we went from seven to three to zero. Has there been any analysis as to what that trend represents? It either represents a decrease of AMP observable events, a learning curve for all parties, or a change in the threshold of when to give an AMP.

So maybe -- we have gone from seven to three to zero. What is the analysis for that trend?

MS HORNOF: Monica Hornof, for the record.

So I think most of the AMPs have been issued By the Directorate of Nuclear Substance Regulation, so I would like to pass it on to either Colin Moses or Karen Owen-Whitred, just to give us a little bit of an idea on the identified trend in the AMPs.

Thank you.

MR. MOSES: Colin Moses. I am a former Director General of Nuclear Substance Regulation. Probably I would be better placed to speak to trends than Karen. And I just sort of hesitate to even refer to that as a trend.

The administrative monetary penalty is one of those options that we have in the enforcement tool kit for Designated Officers and for the Commission that is really considered on a case-by-case basis. So it takes an event or circumstance or a finding to trigger a review of the appropriate enforcement mechanism to leverage in that case to correct that behaviour before we would even get at the point of considering an administrative monetary penalty.

I think it is worth looking at what are considerations, what are the types of events that may trigger that, and certainly I can refer the question back to Karen to speak to the program moving forward, but

because it is such a low frequency occurrence for us, it makes it very difficult to consider and look at trending in terms of whether thresholds have changed, but I can tell you that on recommendation the DO does make a decision based on the specific case at hand, rather than precedents or other matters.

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

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

I will complement Mr. Moses' answer.

Dr. Demeter, the intent of the AMPs is not punitive, so I will start with this qualification. So the administrative monetary penalty is -- the trend, as Mr. Moses mentioned, it's three points. For me to start to look at the trend, analyze the trend, I think it's premature to do it at this point.

The key point here is the threshold did not change. We have a process in place by which we evaluate how the AMP is issued and the determination by the DO with respect to the funds or the monetary, I guess I'm going to say, penalty that will be imposed on the licensee.

So all this follows a process with respect to the findings by the inspector. Then it's taken over by the division, separate from the division that issued the

AMP, to look that the process was followed adequately.

And then the intent of the AMP is to render the licensee into compliance. So your question is, as we go towards zero, is it an indication of changes in the threshold with respect to issuing the AMP? The answer is no. Our inspectors are independent to propose an AMP for the DO and so the Designated Officer has the authority to accept or not accept the AMP.

So at the end the reduction can be taken into indication of the licensee rendering or achieving compliance without the issuing of the AMP. So the AMP is mainly retroactive with respect to the behaviour, as Mr. Moses mentioned, the behaviour or the compliance history.

Now, we have -- the ROR for DNSR is coming up and then the ROR will discuss -- actually present to you the AMPs and then we can provide more precise information if you look for analysis of how the AMPs were issued.

Over to you, Karen, if you want to add anything.

MEMBER DEMETER: That's very good. Thank you.

THE PRESIDENT: Okay.

Dr. McKinnon...?

MEMBER MCKINNON: Thank you.

My question is also data-related.

I was looking at some of the authorities issued. There are some very detailed tables in the slides. In particular, the Directorate of Nuclear Substance Regulation has by far the largest number of authorities issued and most of those were licensing amendments. There were around 1,000 a year in 2017 to 2019, which is a big number, more than any of the others by far.

What exactly are these amendments? What do they consist of?

MS MCGEE: Kelly McGee, for the record.

I will ask Karen Owen-Whitred to provide a response to your question.

MS OWEN-WHITRED: Karen Owen-Whitred, for the record.

Actually, I would like to pass this on to -- I have two of my Directors joining us today who are responsible for the majority of those licence amendments, so I will ask Mr. Sylvain Faille if he is available and, if not, Mr. Mike Broeders.

MR. FAILLE: Thank you, Karen.

This is Sylvain Faille, for the record.

I don't know if you can hear me.

THE PRESIDENT: Yes, we can.

MEMBER MCKINNON: Yes.

MR. FAILLE: Okay.

I am the Director of Nuclear Substances and Radiation Devices Licensing Division.

In regards to amendments, those have a wide range of requests. It could be to change -- to update the radiation safety manual of a licensee and it could go all the way up to requesting new equipment or new devices to be added to their existing licence, or including new room for hospitals or new locations. Therefore, the number is not necessarily representative of the amount of time needed to review those decisions. Some are very quick and can be turned around in a matter of hours, where others may take weeks or even months to review.

THE PRESIDENT: Thank you.

Mr. Broeders, did you have anything you wanted to add?

MR. BROEDERS: Maybe just one quick note.

I am in the unique position of having some Class I and some Class II licences in the division. The Class II licence process is similar to what Mr. Faille explained. The amendments can be triggered by something as benign as a change in organizational structure, like a title or whatnot, or it can be quite significant in the case of someone completing their commissioning work and they are asking for a release of a hold point that allows them to proceed with routine operation.

In the Class II licence structure, the details of the program are incorporated into the body of the licence by way of an appendix. It serves a similar purpose as an LCH in a Class I licence. So instead of amending the LCH like we would a Class I, we amend the licence. So that drives the number of amendments up somewhat, but it does keep everything together in one package in the licence.

Contrary to that, in the Class I licences, that is not in the authority of a DO. That has to be referred to the Commission if an amendment is requested. However, the amendments to an LCH is within the purview of a manager in their management function, provided it stays within the same licensing basis.

THE PRESIDENT: Thank you.

Dr. Lacroix...?

MEMBER LACROIX: I want to come back to that training program of the DOs.

I was wondering, from what I gather, this is essentially an in-house program, training program, and I was wondering, are there similar programs in other nuclear regulatory bodies elsewhere in the world and, if so, do you interact with these other agencies in order to improve the in-house program?

MS MCGEE: Kelly McGee, for the record.

Ms Panichevska, would you like to start responding to Dr. Lacroix's question?

MS PANICHEVSKA: Thank you, Kelly.

Tetyana Panichevska, for the record.

To start off, so far we have been looking around. However, we have not been doing a comprehensive analysis to really duplicate other regulators. However, it is a best practice we have seen so far. What we have been doing is working for us and the feedbacks are very positive.

THE PRESIDENT: Thank you.

Mr. Jammal, did you have something you wanted to add?

MR. JAMMAL: Thank you, Madam President.

It is Ramzi Jammal, for the record.

The CNSC underwent international reviews through the RS mission and the uniqueness of the Designated Officer is unique to Canada with respect to the power granted to the DO by the Commission.

My colleague mentioned the fact that it is a good practice. It has been the accolade internationally with respect to the functionality of the Designated Officer at the CNSC.

So we have many of the member states or lessons learned from other regulators that would like to

copy or mimic, but the law is the Act provides us with that power in order to make these decisions.

If you ask, is there any comparison to other regulatory bodies, there are some similarities but no identical process for the training and that is where the interest comes in through our management system. So our colleagues in the Secretariat, our colleagues in LSU put the training together and then no DO is issued a certificate without the satisfaction by Mr. Leblanc and Madam Thiele indicating that the individual is worthy to obtain the certificate. So there is always a determination and a professional determination by the Secretariat and LSU with respect to the Designated Officer.

Internationally, the most common practice is issuing of the certificate for transport that is globally being applied. The CNSC is part of the international benchmarking for the transport and our training speaks for itself.

With respect to the DO, again, the powers that the Commission has given the DO at the CNSC would like to be -- and it is considered to be international best practice and many regulators would like to copy it.

MS MCGEE: President Velshi, Kelly McGee for the record.

Greg Lamarre would like to provide the

Commission with some additional information with regard to the program review for the DO program.

THE PRESIDENT: Thank you.

Mr. Lamarre...?

MR. LAMARRE: Good afternoon.

Greg Lamarre, Director General of the Directorate of Safety Management.

I know that the DO program has gone through some program reviews in the past. I don't know if I am the best person to talk to it, it might actually be Mr. Robertson or his team who oversees the program review, but suffice to say that a comprehensive program review of this program has been done in the past, there were some actions that came out of that and those actions have been incorporated into the continuous improvement of the program. So I think in line with what Mr. Jammal was saying, we are always looking for opportunities to improve the program and we have on a number of occasions over the last number of years.

THE PRESIDENT: Thank you.

Mr. Jammal...?

MR. JAMMAL: Thank you, Madam Velshi.

I would like to add for the record that nationally with respect to the training program -- and I believe I did not finish my answer for Dr. Demeter, even

though he didn't ask it -- but the fact that the PHAC, the Public Health under Health Canada has seconded our colleague Jean-Claude Poirier in order to establish a similar AMP program with respect to the capability of issuing AMPs under the *Quarantine Act* for Canada.

So again, that is another accolade or a benchmarking process nationally within Canada that they came to the CNSC with respect to establishing a program for the AMPs.

And I would call it quasi-DO, because the AMPs that have been recommended under PHAC would be equivalent to DO of the CNSC and the same thing applies internationally.

THE PRESIDENT: Thank you for sharing that.

We have --

MS MCGEE: My apologies.

Kelly McGee, for the record.

Monica Hornof also had additional details to provide the Commission, if you would like some more information.

THE PRESIDENT: Why don't we see if we have more questions and then come back for any closing comments from you folks.

Dr. Berube...?

MEMBER BERUBE: Yes. This question has to do with COVID actually, with the situation here. Fortunately, we have been pretty lucky so far and haven't had any infections within the organization itself, but should that ramp up for whatever reason, is there an active pool of DOs certified someplace, a list someplace in the event that somebody does get sick, can't come to work, can't just fit anymore, that could be substituted quickly in the event that something like that should happen?

MS MCGEE: Kelly McGee, for the record. I will ask Monica to give you some information.

MS HORNOF: Monica Hornof, for the record. So to answer your question, there is no backup list of DOs per se. The persons in the positions that have been designated as DO positions are the current DOs. However, the way the structure is set up in the pyramid structure where the Directors have the same authorities as their Project Officers, DGs have the same authorities and then some of the Directors, and so on, should somebody become ill or they are not able to carry out their authorities, the person above them is able to carry out the same authorities.

So Mr. Peter Elder and Mr. Ramzi Jammal have all of the authorities of all the DOs in their

respective branches. So worst comes to worst they are able to carry those authorities out. So that is somewhat -- that is one of the reasons it has been set up that way, so that there is always somebody who can carry out those authorities.

Now, if it really came push to shove, there are other staff who do work with DOs, just like CNSC staff work with their Directors. So if somebody was not able to be in their position and they had to be replaced, as long as somebody else was appointed into the DO position, the DO -- and they got the training, the DO could be swapped out. So that is really the other option that they have there, but there is no backup list per se.

THE PRESIDENT: Okay. Thank you.

Dr. Demeter...?

MEMBER DEMETER: I have no more questions.
Thank you.

THE PRESIDENT: Dr. McKinnon...?

MEMBER MCKINNON: Yes, thank you.

It was mentioned in the presentation or in the slides that one of the effects of COVID-19 has been that the DO processes are now electronic. So given the volume of the decisions and the documents and other work-at-home demands on IT infrastructure, has there been a review of IT capacity and requirements to ensure smooth

operation, safe backups and security of the system?

MS MCGEE: I will ask Colin Moses to provide an answer.

MR. MOSES: Hi. I'm Colin Moses, current Director General of the Information Management Technology Directorate and CIO for the organization.

So the short answer is certainly this experience stressed our networks and in the early days we had to do a number of steps to strengthen and improve and augment the capacity of the systems that we do have for remote connection, but I am very happy to report that largely that work has been completed. So we have more than enough capacity for the entire population of the organization to be connecting and working on a regular basis remotely.

In addition, we have actually modernized a redundant system that allows for a separate pipeline into our systems, into our networks so that we can have another population should we have challenges with the existing system to connect in and operate as well.

So with those dual redundancy and a high reliability of the systems that we have adopted, we do have a strong infrastructure to support the continuation of the DO program and, quite frankly, every other operation of the organization through a remote workforce and have been

delivering on that for the last six months as well during this period.

MEMBER MCKINNON: Great to hear that.

Thank you very much.

THE PRESIDENT: Dr. Lacroix...?

MEMBER LACROIX: I have no further questions.

THE PRESIDENT: Dr. Berube...?

MEMBER BERUBE: I have no more questions either.

THE PRESIDENT: Okay. Thank you.

So, Ms McGee, I will turn it back to you for any closing comments or any additional information you wanted to share.

MS MCGEE: Thank you very much, Madam President.

On behalf of Secretariat and my colleagues, I don't have any additional information to provide and we all appreciate the opportunity to have been here today to discuss the DO program.

THE PRESIDENT: Thank you for sharing the program with us.

Before we move to our next agenda item, maybe we will take a five-minute break just to stretch, walk around, and we will resume at 2:31. Thank you.

--- Upon recessing at 2:26 p.m. /
Suspension à 14 h 26
--- Upon resuming at 2:31 p.m. /
Reprise à 14 h 31

THE PRESIDENT: Okay, we are ready to get started again.

CMD 20-M27

Written submission from CNSC staff

THE PRESIDENT: The next item is the Event Initial Report regarding an exposure above regulatory limit of a non-Nuclear Energy Worker at CancerCare Manitoba, as outlined in CMD 20-M27.

I note that we have representatives from CancerCare Manitoba joining us remotely and who will be available for questions.

Before opening the floor for questions, I will turn to CNSC staff.

Ms Owen-Whitred, do you wish to add anything?

MS OWEN-WHITRED: Yes. Thank you.
Good afternoon, Madam President and

Members of the Commission.

My name is Karen Owen-Whitred and I am the Director General of the Directorate of Nuclear Substance Regulation.

With me today are staff from the Radiation Protection Division and from the Accelerators and Class II Facilities Division.

We are here today to present an event that involved a dose to an individual above regulatory limits.

On March 10, 2020, the Class II Radiation Safety Officer, or RSO, of CancerCare Manitoba notified the CNSC that a worker in the radiation therapy department had received a dose in excess of the regulatory dose limit, as indicated by his dosimeter, for the fourth calendar quarter in 2019. The work activities of the individual, who is a non-Nuclear Energy Worker, were immediately restricted so as not to further contribute to his radiation dose.

The reported dose was 3.54 mSv effective dose.

A worker dose of 3.54 mSv is significantly higher than the highest reported dose of 0.5 mSv for any worker at CancerCare Manitoba in the previous three years at this location. It is also much higher than the highest prior dose of 0.1 mSv received by this individual worker.

The licensee conducted an investigation

and identified a non-occupational activity as the sole explanation for the exposure. A family member of the worker underwent a nuclear medicine procedure in the same hospital as the worker. The worker accompanied the family member during the visit, while wearing his dosimeter.

The licensee asserted that the entire dose was attributed to this caretaking activity and not related to the licensed activity. The licensee also confirmed that there have been no other unusual dose results among workers at this facility.

Upon receipt of this report, subject matter experts in the Radiation Protection Division verified the dose calculation. The independent calculation, completed on May 21, 2020, indicated that 1.39 mSv of the reported 3.54 mSv could be attributed to the caretaking activity based on the information provided by the licensee.

CNSC staff concluded that the remaining dose recorded on the dosimeter of 2.15 mSv could not be explained by the scenario described by the individual.

Although CNSC experts do not agree that the full 3.54 mSv dose was received during the caretaking activity, the CNSC accepts the licensee's assertion that this was most likely a non-occupational dose and that no corrective action is required.

CNSC staff will monitor worker doses for this licensee for any indication that this was not an isolated event.

The worker was authorized to return to unrestricted work on June 1, 2020. The worker experienced no health effects from this exposure, nor are any expected.

To date, the CNSC has received no dose change request related to this event.

This concludes our report.

CNSC staff are available to answer any questions you may have.

THE PRESIDENT: Thank you very much.

I will turn the floor to Representatives from CancerCare Manitoba.

I understand that Ms Dombrosky is here with us. Would you wish to make a statement?

MS DOMBROSKY: This is Deanne Dombrosky, for the record.

We have nothing to add to the report that has already been provided by the CNSC.

THE PRESIDENT: Thank you.

And before I open the floor to the Commission Members for questions, Dr. Demeter, did you want to make a statement?

MEMBER DEMETER: Yes. I just think it is

important as a disclosure that CancerCare Manitoba is on the same health institution campus that I work at, but I work for a different organization. CancerCare Manitoba is independent of the organization I work for, so I just thought I should disclose that up front.

THE PRESIDENT: Thank you very much.

Well, why don't we start with Dr. Berube.

MEMBER BERUBE: Well, we have another case of mystery dose, I will say that right up front, which we are seeing quite a bit of lately. I think this is probably what, the fourth in the last two years.

That being said, I have a question pertaining to the investigation.

This caregiving incident, where did this take place, on the facility or did this happen outside of the facility? Because if it happened outside of the facility, I'm trying to understand how the dosimetry would have left the building when it's not supposed to.

MS DOMBROSKY: Deanne Dombrosky, for the record.

That caretaking took place in the Health Sciences Centre, which is connected to CancerCare Manitoba. As Dr. Demeter stated, it is a separate facility, but it is part of the same -- it's on the same facility grounds.

So the radiation oncologist had his

dosimeter on while he was taking his mother to her appointments. We have discussed with him during the investigation that that should not have happened and that he has -- he now understands that he needs to make sure that he is not wearing his dosimeter if he goes to attend non-personal events in the associated building.

Our doctors do go into the Health Sciences Centre occasionally to assess patients who may be over there, but as this was a personal trip that he was taking we have explained to him that he needs to ensure that it does not happen that he wears his badge on personal assistant trips over to the Health Sciences Centre.

MEMBER BERUBE: Just while I have you on, is this a common event that people go back and forth? Is anybody monitoring dosimetries that go back and forth? I think in the past we have had a discussion about where the dosimetry belongs, it is either on your body or in the rack, and I think that Madam Velshi brought that up very clearly to one of your colleagues, probably within the last year.

So could you explain to me how you actually do control of dosimetry? How do you control that? It is supposed to be either on the body or on the rack.

MS DOMBROSKY: Deanne Dombrosky, for the record.

What we do is we require our staff members to wear their dosimeter with them on their person whenever they are attending a radiation area in CancerCare Manitoba.

The majority of our staff members do wear their dosimeter on their person while they are at work during the day, as they may be entering radiation areas or clinics or into offices without going back to a common area where the badge would be kept.

We do instruct all of our staff members to leave their dosimeters at the CancerCare Manitoba facility when they are leaving the facility.

The Radiation Therapy Department has, as you mentioned, a rack where the badges are kept and the therapist will pick that up at the beginning of their shift and put it back at the end of their shift.

The radiation oncologists, they generally keep their badges in their offices and we do instruct them the same thing, that their badge is to remain in their office when they are off the premises and they would then put it on when they come into work and put it away when they leave.

THE PRESIDENT: Dr. Demeter...?

MEMBER DEMETER: Thank you.

So I guess I can confirm from what you are saying that in this particular instance the dosimetry badge

stayed in the facility when the individual left for home.

In this instance, did they take their badge home with them or was it left in their office?

MS DOMBROSKY: Deanne Dombrosky, for the record.

This instance for this radiation oncologist, when we had our investigation meeting with him, we determined that he had indeed been taking his badge home with him, along with his ID badge in the evenings, and we have since, during that meeting that we had with him we have re-issued the statement and the requirement that we need the badges to stay on the CancerCare Manitoba facility when the person is not at work.

MEMBER DEMETER: Okay. That helps a bit.

I was a bit -- the caregiver dose for looking after one individual seemed high to me given the effect of half-life of this particular product and based on dose rates from patients with this product, based on the effect of half-life and based on the fact that our nuclear medicine technologists who are exposed to radiation all day get 2 to 3 mSv a year effective dose from being exposed. So I was a bit taken aback by 1.39 mSv from one exposure to one particular patient.

I don't necessarily need the details during the Commission, but I would really appreciate from

CancerCare Manitoba, and/or validated through staff, that they provide the Commission the dosimetry calculations, because to me it just doesn't make sense given what I know about this isotope. Maybe CancerCare can comment on that, because it is sort of an order of magnitude out from what I expected.

MS DOMBROSKY: Deanne Dombrosky, for the record.

We did provide calculations to the CNSC during our investigation and we had a number of back-and-forth discussions with Diego Estan and changed some of our parameters and came up with the current dose estimation that we had provided. We did provide that to the CNSC as well. If you have specific questions as to that dose calculation, my colleague Bryan McIntosh, who is also on this call, he did the majority of that calculation and I'm sure he would be able to answer any specific questions, or we can also provide you with the document that we provided to the CNSC.

MEMBER DEMETER: Well, perhaps to not prolong the discussion, maybe CNSC staff can provide the Commission Members with that document and their analysis to help us better understand how that amount was achieved, noting that it doesn't account for the full dosimetry dose.

THE PRESIDENT: We will take that as an

action for CNSC staff.

But a follow-up question I have for CancerCare Manitoba. So have you -- I couldn't see that on the report or didn't hear that in the update. Have you or are you going to be requesting a dose change?

MS DOMBROSKY: Deanne Dombrosky, for the record.

We are not requesting a dose change at this point because, as stated, we have not been able to explain the entire dose, so we have left it on the staff member's record. We have not asked to have that dose changed.

THE PRESIDENT: But of the 3.54, you know, you and CNSC has confirmed that there is a portion, that is the 1.39, that is non-occupational. So that you know for sure.

And the reason why I ask is the need to keep accurate occupational dose records and why would that -- why would you not at least request a change for that amount?

MS DOMBROSKY: Deanne Dombrosky, for the record.

We hadn't thought of it in that way and I am definitely -- I can look into requesting a dose change for that amount, to have that removed from our staff

member's record. Thank you for that suggestion.

THE PRESIDENT: Well, let me ask CNSC staff.

Isn't that what our expectation would be, that we try to keep our occupational dose records as accurately as we believe they can be?

MS OWEN-WHITRED: Karen Owen-Whitred, for the record.

I would like to turn that question over to Ms Caroline Purvis.

MS PURVIS: Good afternoon.

Caroline Purvis, Director of the Radiation Protection Division, for the record.

Absolutely I do agree, Madam Velshi, we do want the records to be as accurate as possible. It was my understanding in this case that the licensee was not pursuing the dose change request, but I'm happy to hear that they will for this portion of the recorded dose and we will review it and assess it and it will be approved.

THE PRESIDENT: Thank you very much.

So, Ms Dombrosky, if you can follow through with that, that would be great.

And another follow-up question. You did say that you have followed up with this individual to go over your expectations, whether it is not to wear the badge

when they leave the facility or to leave it in the office, but how confident are you that this is not a much more widespread practice and that other staff members could also learn from this experience and how widely have you shared that?

MS DOMBROSKY: Deanne Dombrosky, for the record.

We are hoping that it is not a widely spread practice. When we do our initial radiation safety training with all of our staff members, we do inform them that this is the expectation of radiation protection with regards to their badges. We do have a refresher training session that is scheduled to come up this fall. We have this every two years and we will be including in that refresher training session a reminder to all staff of the importance to leave their badges at work when they are not there and not to take them with them and we will include what can happen if they do take them home. And I do make sure when we do our initial training, I let them know why we expect them to keep them at work, but we will be including that in the upcoming refresher training that is scheduled for this fall for all staff who work with radiation.

THE PRESIDENT: Thank you very much.

Dr. McKinnon...?

MEMBER MCKINNON: Yes, thank you.

I'd like to start by just making a comment to echo concern similar to Dr. Berube about the anomalous readings because "anomalous" really means we just don't understand it. And the concern would be over, you know, the health implications of, you know, what the actual source was, you know, if that could be of importance but, you know, it remains a mystery now.

My question is more basic. I noticed -- and this is really -- I don't really understand how these dosimeters work, but they're recording down to a hundredth of a millisievert. And so my question is, really, when they're manufactured, there's always -- you know, in any device that's manufactured there's always some kind of variability.

How is it established, you know, the accuracy and precision of that particular device, you know, and could this error be associated with any manufacturing aspect? Because it could still respond -- it was tested, but what is its accuracy?

MS OWEN-WHITRED: Karen Owen-Whitred, for the record.

Dr. McKinnon, I'm not sure if you're addressing that question to CNSC Staff or to the licensee, but I will just ask Ms Caroline Purvis if she has anything

to add from the CNSC's perspective.

MS PURVIS: Caroline Purvis, for the record.

Do dosimetry that's used by workers in Canada, for nuclear energy workers there's specific requirements in our regulations to use dosimetry that's licensed by the CNSC, so this program of licensing dosimetry services and the dosimeters that the workers wear is -- follows regulatory requirements which prescribe different criteria for ensuring the accuracy and precision of dosimeters.

Depending on the commercial service that's used, they have different processes to look at the minimum reportable dose, for example, you observed the low exposure, but there are also different routine operations to ensure that dosimeters that have been read at the dosimetry service and then reused to be sent out again for use are -- I'll use just common terminology -- zeroed so that there's no remaining exposure on that dosimetry, it's fit for use, and it will continue to operate against the criteria for precision and accuracy.

MEMBER MCKINNON: So they are routinely calibrated or recalibrated to make sure they are both precise and accurate.

MS PURVIS: That's correct. And there are

also requirements for these licensed dosimetry service providers to have both routine performance testing, so that's in-house testing, and independent testing to ensure that they are essentially reading the dose that's been delivered to the dosimeter.

MEMBER MCKINNON: So the reading error could be eliminated for the cause in this case.

MS PURVIS: I would not believe that this was a reading error, exactly. The dosimetry service providers are -- all perform very well and there's no indication that there was anything amiss in this regard.

MEMBER MCKINNON: Thank you.

THE PRESIDENT: Dr. Lacroix.

MEMBER LACROIX: Thank you.

I'm trying to understand here, an oncologist is a medical doctor. Isn't that right? Am I right?

MS DOMBROSKY: Deanne Dombrosky, for the record.

Yes, radiation oncologist is a medical doctor.

MEMBER LACROIX: Okay. So as a medical doctor, they never handle radioactive material themselves.

MS DOMBROSKY: Deanne Dombrosky, for the record.

No, the doctor would not be handling radioactive material themselves.

MEMBER LACROIX: Okay. So the only way that they get exposed to radiation is through their patient or getting close to a radiation-emitting device. Am I right?

MS DOMBROSKY: Deanne Dombrosky, for the record.

Yes, you're correct.

MEMBER LACROIX: Okay, okay. So that's really strange, this dose. I mean, I'm baffled. I'm baffled.

Thank you.

THE PRESIDENT: Dr. Berube.

MEMBER BERUBE: No further questions.

THE PRESIDENT: Dr. Demeter.

MEMBER DEMETER: Just one. Thank you.
One further clarification.

As I read the report, I don't think I saw it in there, but it might be there, there was no indication of a static dose to this dosimeter like it got contaminated. Sometimes with some of the dosimeters, you can tell a static dose, which is sort of exposed for a long time in imperfect circumstances versus an actual dose.

Was there any indication that would

suggest this was a static dose from potentially contamination?

If you're caregiving for someone who had this procedure and there's urine contamination, it would create a static dose in the dosimeter if it got contaminated, so is there any -- any indication this could have been a static dose?

MS DOMBROSKY: Deanne Dombrosky, for the record.

We did go back to the National Dosimetry Services and ask them if there were any anomalies in the dosimeter that had been worn, and they confirmed with us that -- they said their internal standard procedures and processes were accurately followed and the dose readings across the dosimeter elements were consistent and do not indicate the presence of anomalies.

MEMBER DEMETER: Okay. So that answers my question. Thank you.

I have no further questions.

THE PRESIDENT: Thank you.

Dr. McKinnon?

MEMBER MCKINNON: No further questions, thanks.

THE PRESIDENT: And Dr. Lacroix, last chance.

MEMBER LACROIX: I have no further questions.

THE PRESIDENT: Okay.

Thank you very much to Cancer Care Manitoba for coming and briefing us on this incident and for staff -- to staff as well.

CMD 20-M29

Written submission from CNSC staff

THE PRESIDENT: The next item -- actually, the next two items are about fires at different Suncor facilities.

The first one is regarding at Suncor Tar Island location near Fort McMurray as outlined in CMD 20-M29.

And I believe we have a representative from Suncor Energy Inc. joining us remotely who will be available to answer any questions.

So let me turn the floor to CNSC Staff first. Ms Owen-Whitred, over to you for any further remarks you'd like to make on this.

MS OWEN-WHITRED: Thank you, Madam President.

Once again, my name is Karen Owen-Whitred,

for the record. I'm the Director General of the Directorate of Nuclear Substances Regulations.

With me for this report are Mr. Sylvain Faille, Director of the Nuclear Substances and Radiation Devices Licensing Division, and Kendall McAllister, a licensing specialist within that same division.

We are here today to provide the Commission with information pertaining to a fire that occurred at the Suncor Tar Island location, located off Highway 63 near Fort McMurray, Alberta on the evening of August 14th, 2020.

The Radiation Safety Officer, or RSO, for this facility contacted the CNSC Duty Officer to report the situation on August 15th, 2020. The RSO reported that there are 17 fixed nuclear gauges installed on this site, in Plant 4 and in the adjacent Plant 16. Five of those 17 gauges were close to the area where the fire occurred; namely, three gauges from Plant 4 and two from Plant 16, with none being directly involved in the fire.

The RSO has provided a number of updates to CNSC Staff since the event occurred and submitted the 21-day report on September 4th, 2020. The licensee indicated that they are still investigating the cause of the fire and that they are maintaining safety barriers and ensuring that the gauges cannot be accessed until their

condition can be fully assessed.

The licensee has confirmed that they will update the CNSC as new information becomes available.

Although the licensee has not yet been able to safely access those five gauges to perform a full assessment, information gathered through visual verification and radiation surveys did not reveal any signs of damage to the gauges and no elevated radiation levels were detected. The licensee indicated that a qualified third party will come to the site to assess the conditions of all five potentially affected gauges once the plant is in a safe state.

CNSC Staff will continue to review the information as it is provided by the licensee. At this time, there are no concerns with respect to safety of persons or the environment, as the measured dose rates are within background levels.

And as you've already pointed out, Madam President, this licensee also reported a fire at a different location within the Fort McMurray area in December 2019, for which CNSC Staff verbally presented an Event Initial Report to the Commission in that same month.

CNSC Staff will be providing the Commission with an update on this EIR directly after the reporting that we're delivering now, noting the removal of

the devices involved in that fire, which are now in safe storage awaiting disposal.

This concludes our report and we are now available to answer any questions the Commission may have.

THE PRESIDENT: Thank you.

I'll turn the floor to Mr. Dann Nelson from Suncor if you'd like to make a statement.

MR. NELSON: Thank you. Dann Nelson, for the record.

I sent another update yesterday. I'm not sure if it made your guys' report as of yet. And it's just that we were able to get closer to two of the gauges that we were unable to get to in Plant 4 and we were able to verify that that part of the plant was not affected by the fire at all.

So we wanted to remove two of those gauges from the reports moving forward because there's no damage. The levels were all normal.

MR. LEBLANC: Excuse me, Mr. Nelson. We hardly can hear you.

I don't know if you're too far from a microphone or maybe there's another means you can try, but we just can't hear you.

MR. NELSON: How about now?

MR. LEBLANC: Wow, that's better.

MR. NELSON: My apologies. I put some big headphones on here.

All right. Dann Nelson, for the record. I'll just reiterate.

We were able to get access to two of the gauges in Plant 4 that we had been unable to get access to previously due to high venting in the plant, and we can confirm that two of the gauges in Plant 4 are not damaged. They were not -- they weren't exposed to any heat damage, any fire. The readings were good, and there's -- I'd like to remove -- request to remove those from the reports moving forward, so it'd just be the two gauges in Plant 16 that need to be assessed and then the one in Plant 4.

That would be the only thing I'd like to add. And that was sent to my licensing specialist, Kendall, yesterday.

THE PRESIDENT: Thank you.

We'll turn it over to the Commission Members, then, for questions, and starting with Dr. Demeter, please.

MEMBER DEMETER: Thank you.

The only question I had was when these fixed gauges are built and put into an industry, what's the normal specifications for heat tolerance? Like are they built so they could tolerate a fire or, you know, what's

the sort of safety profile for these devices relative to fires?

I'm not sure who would be best to answer that question, to be honest.

MR. NELSON: It's probably not -- Dann Nelson, for the record.

It's probably not me. I know they have Type A certification and then the source themselves have special form, but I'm not an expert on that.

THE PRESIDENT: Anyone from CNSC? Mr. Faille?

MS OWEN-WHITRED: Karen Owen-Whitred, for the record.

I might need to go back and check with our specialist to get the exact information that you're looking for, Dr. Demeter. What I will do is turn it over to Mr. Sylvain Faille in case he is able to offer any other detail at this time.

MR. FAILLE: Sylvain Faille, for the record.

As Ms Owen mentioned, we will need to go back to the specialist for that specific question. But in general, those devices are designed and those are certified by CNSC, and the same as the sealed sources.

In this case, as Mr. Nelson mention,

there's some specific requirements for the sealed source themselves and there are some testing requirement, including fire up to 800 degrees Celsius for those sources for a small amount of time. So therefore, even if they're subjected to high heat, the source themselves will probably remain safe.

The other aspect is mostly on the design of the device itself, as most of them have lead shielding, so those might be damaged by the fire if there's a leak of -- as when the lead melts and expands in the device itself, there could be a radiation hazard. And that's why having the dose rates is very important in those case to assess the condition of those gauges.

But if you need more details, we would need to go to our engineers in the -- another division that can do the certification.

MEMBER DEMETER: That's good. I'm glad to hear that there's a certification process that takes that into account.

Thank you.

THE PRESIDENT: Okay. Dr. McKinnon?

MEMBER MCKINNON: Yes, thank you. I have a related question.

So it's really when nuclear gauges are being selected to monitor a location, is there any

requirement to do a risk assessment about environmental hazards they might be exposed to and, in this case, it would be fire, but there could be other hazards that cause damage that might impose requirements on the resistance of the instruments themselves?

I'm not sure whether this would be CNSC or to Suncor, but it would be a question about assessing the requirements for the nuclear device prior to it being put on a site.

MS OWEN-WHITRED: Karen Owen-Whitred, for the record.

In a moment I'll turn it over to Mr. Faille to see if he has some additional details he can offer, but what I do want to state at a higher level, as we've already noted, the devices themselves require a certification from the CNSC which is performed by qualified engineers, so the device is certified as safe as the design. And then, in addition to that, there is a licence required from the CNSC in order to possess or make use of the devices.

So just with that context in place, I'll turn it over to Mr. Faille if he can provide any further details on your question.

MR. FAILLE: Thank you. Sylvain Faille, for the record.

The only thing I'd like to add is something I'd already mentioned in the previous answer to the fire. It's the design of the sealed sources. And because those are designed to resist a lot of event that could occur, there's no specific requirements to have any environmental release or environmental assessment when using a nuclear device. Those are part of the certification process when we look at the safety over all those devices and the fact that they are using sealed sources.

THE PRESIDENT: Mr. Jammal.

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

I'd just like to complement the fact that beyond certification, it's a requirement under regulation with respect to the operation, installation so that everything is done according to the design principles of that device.

So once it's certified by the staff and there is an installation takes place, the assessment -- each sealed source, if I may, is designed to fit in a special component, so let it be a measuring of thickness of compressed ore or for determining the thickness of aluminium foil, so each operation requires a special design.

So to answer the question is there an assessment with respect to the external hazard based on if it's installed properly, the answer to that is inherited into the certification and the licensing process and it's the responsibility of the licensee to do multiple things.

One of them is the servicing of these devices will be done by qualified individuals, and they have to conduct leak testing to make sure that the source is still intact and the operation of the device is always maintained in the proper order.

So after the installation, there are verification that must be done by the licensee, and those are done via the reports to the Commission.

If there is any malfunction or any problem with the operations, a report is required to come to the Commission and we always assess with respect to is it a design issue or an operational issue.

So there is ongoing verification from the certification and the licensee is obligated to make sure that the devices installed will operate as designed and they will have to conduct the sealed source testing and verification of the design of the device is maintained and it's functioning according to the manufacturer's specification.

THE PRESIDENT: Thank you.

Dr. Lacroix.

MEMBER LACROIX: Well, Dr. Demeter take my curiosity with his question and I cannot help thinking that lead is used in these capsules as a shielding material due to its high density but, on the other hand, the melting point of lead is slightly above 300 Celsius. So I'm not questioning the certification process here. What I would be curious to find out is, how do you cope with the fact that you use a high density material for shielding but the same material can melt at a mere temperature of slightly above 300 Celsius?

So I'm looking forward to a physical explanation for the encapsulation of the source.

THE PRESIDENT: We'll start with staff.

MS OWEN-WHITRED: Karen Owen-Whitred, for the record.

These types of questions I think we would have been better served to have one of our engineers with us here today. It wasn't the direction that we were prepared for.

We certainly can come back with those -- that type of detail if it's something that you'd like.

I guess at a very high what I would say is to come back to what's been mentioned a couple of times, that there is the design of the device itself and then

there is the sealed source within the device. So while there could be an impact on the lead shielding of the device, we know that the -- well, then the sealed source within the device is also designed in such a way that even should the lead shielding be affected that there would be a secondary layer of defence.

That is a non-technical explanation from my perspective, so certainly if you would like something that was -- is more technically detailed, we can consult with our engineers and get back to you.

MEMBER LACROIX: Yes, indeed. I would appreciate. And I'm even push my questioning by saying that why not use a uranium oxide container instead of a lead container.

So I'm pushing the boundary here, but anyhow, I'm just curious.

MS OWEN-WHITRED: I will put that question for our engineers.

MEMBER LACROIX: Thank you.

THE PRESIDENT: So even though he's not an engineer, we'll get Mr. Jammal to add to this.

MR. JAMMAL: For the record, it's Ramzi Jammal.

I'm not an engineer, either, but I've ran that directorate for quite extensive and, internationally,

there is a certification process.

The question is very valid. I would like to reiterate to the Commission that the certification and the design is not unique to Canada, so there was -- such devices are internationally used all over the place around the world.

So as Karen mentioned, the fact that there are multiple defence in depth and we'll provide you with the certification process and indication with respect to the design itself.

So we're not disputing the fact there is a melting point for the lead, but usually it is lead. And I'm not going to go in details because I know a bit of the details, but I know enough to be dangerous rather than to provide you with enough in-depth experience as an engineer would do.

But definitely in place there are defence in depth.

In addition to the installation, I would like to add and reiterate the fact that our inspectors do go on site and verify the installation, the condition and the environmental qualification and the environment around the sources to determine if it's -- the installation still meets our requirement.

But to conclude, it's not unique to Canada

certification. Those devices are designed internationally and accepted internationally, but we'll provide you with the detail associated to the certification process.

THE PRESIDENT: So mine was a little more tangential to Dr. Lacroix's question, which is the risk of fires.

And I don't know if fires are common. I mean, we heard about one in December and one in March. And again, of course, now you're balancing the risk of, you know, protecting from fire, from radiation.

So maybe I'll turn the question to Suncor. So how are you managing your fire risk as a result of these two incidents?

MR. NELSON: Well, just to answer the initial -- sorry. Dann Nelson, for the record.

Just to answer the initial question of if fires are common, they're not common. Suncor takes safety, you know, above all else. It's one of our core values. And we have -- in the event that an emergency happens, we have emergency response plans in place at each of our sites.

In terms of preventing fires, we have investigations that are very thorough, and there's lessons learned from those investigations, and they're implemented so that we can prevent recurrence. But they're by no means

common.

THE PRESIDENT: Okay, thank you.

Dr. Berube?

MEMBER BERUBE: So my question has to do again with (indiscernible - away from microphone). We're talking about installation practices and things. I'm going to ask CNSC, when we're looking at building codes, especially particularly on these kind of devices. They're used all over the place, as you say, lots in Canada. Are there any local codes for fire protection systems in proximity to these things? Would it make sense to have some kind of fire suppression system fairly close by in the event of these kind of events that would safeguard definitely the sources? But perhaps you can speak to that, give me some background on where that is. I know it's a different legal jurisdiction, but perhaps you could, you know, give me some background on why there wouldn't be fire protection systems in relative proximity to this kind of gear.

MS OWEN-WHITRED: Karen Owen-Whitred, for the record.

I'll provide a bit of a high-level response and then I'll turn to M. Faille, who might be able to speak more about the licensed use of the devices, and also Mr. Jammal previously mentioned the compliance

approach that we would use for any such devices or licensee. So Mr. Jammal might be able to add something to that as well.

So at a very high level, what I can say is that the focus from the device perspective really is on the design of the device to ensure safety regardless of the conditions that it might need to encounter after its lifetime. So that's the focus of the certification.

In terms of the licensing, the use, I'll turn to M. Faille to see if we do have a perspective that we can offer on fire suppression, although, as you've noted, it is a little bit tangential to, you know, what's expected that you need to building codes, et cetera. That's a little bit tangential to our mandate.

Over to Mr. Faille.

MR. FAILLE: It's Sylvain Faille, for the record.

As part of our licensing process, we ensure that licensees have procedures in place for dealing with fires, spills, and any other event that could occur. But we don't go to that level of looking at the fire suppression system or anything like that within the terms of nuclear substances and radiation devices.

I know it's different for bigger facilities. In our case, as the main purpose of those

facilities is not directly related to nuclear, our focus is more on the use of nuclear substances and devices, and therefore what we're looking at are more the program that supports the use of those as opposed to overseeing the entire plant or facility that may include the fire suppression, because I'm sure they have requirements because of the industry that they're in. But that's not something that we're looking after.

THE PRESIDENT: Back to Dr. Demeter. Any additional questions?

MEMBER DEMETER: I have no additional questions, thank you.

THE PRESIDENT: Dr. McKinnon?

MEMBER MCKINNON: No further questions, thank you.

THE PRESIDENT: Dr. Lacroix.

MEMBER LACROIX: I have no further question.

THE PRESIDENT: And Dr. Berube?

MEMBER BERUBE: I have no further questions on this.

CMD 20-M30

Written submission from CNSC Staff

THE PRESIDENT: Okay. So then let's move to the next item regarding the December 2019 fire at Suncor MacKay River location, as outlined in CMD 20-M30.

So Ms Owen-Whitred, again, over to you for any additional comments.

MS OWEN-WHITRED: Thank you.

So for the last time today, for the record, my name is Karen Owen-Whitred. I'm the director general for the Directorate of Nuclear Substances Regulation.

Once again, I have M. Sylvain Faille with me, who is the director of the Nuclear Substances and Radiation Devices Licensing Division, and Kendall McAllister, licensing specialist within that division, as well as Lindsay Pozihun, a CNSC inspector within the Operations Inspection Division.

So we are here today to provide the Commission with an update on a fire that took place at a Suncor facility near Fort McMurray, Alberta, on December 6, 2019. As noted previously, this event was verbally reported at the December 12, 2019, Commission meeting.

In summary, the CNSC duty officer received

a message from the radiation safety officer for Suncor on December 6, 2019, who reported a fire at the Suncor MacKay River site near Fort McMurray. The fire involved four fixed gauges, known as insertion gauges, installed on vessel, each containing five cesium sealed sources with an activity of 1.85 gigabecquerels per sealed source.

As reported at the December 2019 meeting, the condition of the gauges could not be assessed at that time, as the licensee needed to secure the site prior to allowing access to the gauges. On December 20th, 2019, access to the gauges was granted and radiation measurements around the fixed gauges showed readings between 20 to 25 microsieverts per hour.

On December 21st, 2019, a third-party radiation consultant, Stuart Hunt and Associates Limited, was on site to assess the damage sustained by the fire. The fire had compromised the gauges, as there was evidence that some lead shielding had melted and escaped the source holder. The highest radiation field around the gauges showed a dose rate of 60 microsieverts per hour.

Following a CNSC-approved plan, Stuart Hunt technicians successfully conducted the safe removal of the four gauges on January 16th and 17th, 2020. This involved removing the sealed sources contained within the gauges and storing them safely on site until custom

packaging could be manufactured in order to safely transport the sources to a storage facility. A CNSC inspector, Lindsay Pozihun, was available on site to observe the removal.

On July 30th, 2020, Stuart Hunt technicians returned to the site in order to package and transport the sealed sources to their facility for interim storage until disposal. Due to COVID-19 travel restrictions, CNSC staff were not able to be present for that portion of the work.

Stuart Hunt provided a report on the activities performed to the CNSC on August 21st, 2020. The packages were shipped using a commercial carrier and the shipment arrived at the Stuart Hunt storage location on August 4th, 2020. CNSC staff reviewed the report along with the total exposure received by the two technicians involved in the activities, which was 199 microsieverts and 175 microsieverts respectively.

Suncor has indicated that the plant is now back in operation, although there are still many areas that remain under construction as the rebuild is still ongoing. The licensee has purchased new insertion gauges to replace the four that were damaged, and they are in the process of installing these gauges.

CNSC staff are satisfied with the response

from the licensee to this event and considers the event closed. CNSC staff are not planning any further actions in relation to this event.

This concludes my update and CNSC staff are available for any questions the Commission may have.

THE PRESIDENT: Thank you.

Mr. Nelson, do you wish to add anything or make a statement?

MR. NELSON: Dan Nelson, for the record.

Nothing to add other than -- maybe this doesn't matter, but the gauges have now been installed as of August 25th, and they just need to be calibrated by the vendor. So it's kind of full circle. We're back in the business of gauges.

THE PRESIDENT: Okay Good, thank you.

Well, let's open it up to the Commission Members. And we'll start with Dr. Berube.

MEMBER BERUBE: Well, first of all, I want to say to the CNSC staff this is an excellent report. Thank you very much for taking the time and energy to go through this and actually -- this makes it very clear as to what happened and how the disposition of this has come to be, so thank you for that, taking that time and energy to get this this well done.

One of the questions I had prior to this

had to do with the actual sources themselves and the containers, containing vessels, in terms of is that being returned to the manufacturer for evaluation to see if there's any possible improvements to design? I know the external containment of the lead actually had been breached and maybe there might be something to be learned from that. Or is this just going out for disposal at this point? Maybe you could update me on that.

MS OWEN-WHITRED: Karen Owen-Whitred, for the record.

I would refer that to Suncor. I believe Mr. Nelson might be better placed than CNSC staff to provide that answer.

MR. NELSON: Dan Nelson, for the record.

I could maybe speak a little. It's the disposal side of it really is a Stuart Hunt and Associates activity, so we're not really licensed -- we're just licensed to operate them. So I would hesitate to speculate on what they're actually doing with it. I know they're being disposed of. I'm not sure if they're being researched.

MS OWEN-WHITRED: If I may -- Karen Owen-Whitred -- we don't have Stuart Hunt representatives here with us today, but I will just turn to Mr. Faille or Ms McAllister just in case they might have that information

to hand.

MR. FAILLE: Sylvain Faille, for the record.

No, I don't have any information as to whether or not Stuart Hunt will be contacting the manufacturer. Typically I don't think they would, because in this case they had removed the source holder themselves, and I think they stayed at the facility at Suncor, and what they took was really just the dry well containing the sources, and that's what has been shipped to their facility for disposal, not the actual source holder that was originally containing the sources.

THE PRESIDENT: Thank you.

Dr. Demeter?

MEMBER DEMETER: There we go. Thank you very much.

I think this is a good news story, given that the containment was breached and the total dose to those who removed it was relatively low. So I think this is a good news story.

I think there is room, if possible, depending on whether or not the equipment operator would inspect, given the hazard, to provide some feedback to the manufacturer. I know that's sort of tangential to the mandate, but I think it's important that if there was

something found that was unexpected, given the hazard, then there is a learning opportunity. But I have no specific comments. Thank you for the presentation and report.

THE PRESIDENT: Dr. McKinnon?

MEMBER MCKINNON: Just a general question. In this case, the gauges were damaged at the site, and there was a requirement for firefighters to get fairly close, and they were not wearing any radiation dosimeters. And it was mentioned in the report that they had to keep a certain distance away. So in general, is just keeping a certain distance away sufficient as opposed to having a requirement for dosimeters when nuclear devices or gauges such as this would be used at the site? So it's a general question about the requirement for any additional type of monitoring in case there are any accidents with the nuclear gauges. So it would be a question I think probably for CNSC staff.

MS OWEN-WHITRED: Karen Owen-Whitred, for the record.

Before I turn to M. Faille, I would just make the point -- reiterate the point that has been made before that it is the expectation that the onus for safety rests on the licensee in these cases. So it would be our expectation that the licensee would take any necessary measures to ensure the safety of those involved in this

type of activity.

But with that being said, I'll turn to M. Faille to see if he can provide additional information at the level of our licensing oversight.

MR. FAILLE: Sylvain Faille, for the record.

As Ms Owen mentioned, some of that information is also related to the certification of the device themselves where -- going back to again where we're looking at the safety and operation of those devices. And look at the radiation profile on those devices with the -- when the sources are in exposed position and closed position. That's part of the requirements for the design and certification.

Then when they're in use, licensees, depending on the type of gauges, in this case for fixed nuclear gauges, the dose around those gauges are very, very small. And typically people are not working nearby those gauges. They're either in vessels in this case or on pipes and things like that.

So there's other programs available to the licensee and it's their obligation to look at and review the potential dose to the workers and to document that as part of their radiation safety manual, indicating what would be needed for the workers and their protection. So

if in some cases they may require using a dosimeter; in other cases, just by justification, saying, Nobody's going to be near, and the dose will be negligible, then there's no more need to have any TLDs or anything like that to measure the dose to the workers.

But one of the other requirements of their licence is to have a radiation survey meter available. In case there's a suspicion that the device is malfunctioning, they need to be able to measure the dose and make sure there's a perimeter around it so that people cannot access until the repair can be made.

THE PRESIDENT: Dr. Lacroix?

MEMBER LACROIX: Yes, indeed. These sources are beta emitters; right? This is cesium-137?

MR. NELSON: Dan Nelson, for the record. Correct, cesium-137.

MEMBER LACROIX: Okay, so the flight path of beta particles is, what, a metre, a metre and a half?

MR. NELSON: Dan Nelson, for the record. I'm not sure, yeah.

MEMBER LACROIX: No, no, I'm asking a question, a general question to the staff.

MR. FAILLE: Sylvain Faille, for the record.

The cesium is mostly a gamma emitter.

MEMBER LACROIX: Oh, it's a gamma emitter?

MR. FAILLE: Yeah, and that's why there is lead shielding involved to attenuate the dose.

MEMBER LACROIX: Okay, okay. Thank you.

THE PRESIDENT: Okay, last round. Dr. Berube?

MEMBER BERUBE: I have nothing more on this, thank you.

THE PRESIDENT: Dr. Demeter?

MEMBER DEMETER: Nothing more, thank you.

THE PRESIDENT: Dr. McKinnon?

MEMBER MCKINNON: No more questions.

THE PRESIDENT: Dr. Lacroix?

MEMBER LACROIX: No further question.

THE PRESIDENT: And so my last question to staff, more, if I look at the last two incidents, it looks like -- I mean, it's too bad that there was the two fires. But Suncor seems to have done all the right things, reporting promptly, the right remediation action. From staff's perspective, is there anything else that we would have expected Suncor to do that they didn't do?

MS OWEN-WHITRED: Karen Owen-Whitred, for the record.

Before turning over to M. Faille and perhaps Ms McAllister would also like to weigh in on this,

I would just agree with you that from CNSC staff's perspective, this has been a good response from the licensee and certainly as indicated in the -- well, in both of these reports, at the end of the day, we feel that we can make the assessment that there has been no risk to people or to the environment.

But with that, I'll turn it over to M. Faille, in case there's any additional information he can add.

MR. FAILLE: Thank you. Sylvain Faille, for the record.

I will probably go to Ms McAllister, because she's the one dealing with Suncor on a regular basis, so she'll be able to provide her view on that directly.

MS McALLISTER: Hi, Kendall McAllister, for the record.

I've been Suncor's assigned licensing specialist for quite a while, and I've dealt with Dan directly and reviewed many of their programs and been involved in both the reports. And from what I can see, they have a very robust program, and Dan's always very prompt with following up. And in my opinion, they've done everything they could in this situation.

And I agree with Dr. Demeter in that this

is a good case scenario, that they have done all the things that they should and did all the follow-up. And so I really don't have anything to add.

I think the way that they handled the reports and the incidents themselves were good and they followed their procedures, so.

THE PRESIDENT: Well, thank you. Thanks for that confirmation. Thank you, staff, for the comprehensive reports that you sent. And thank you, Mr. Nelson, for answering our questions.

So this concludes the public meeting of the Commission. Again, thank you all for your participation. Please stay safe and well.

Bon fin de journée. Bye bye.

MR. NELSON: Thank you. Bye bye.

--- Whereupon the hearing adjourned at 3:30 p.m. /

L'audience est ajournée à 15 h 30