

Canadian Nuclear
Safety Commission

Commission canadienne de
sûreté nucléaire

Public meeting

Réunion publique

June 28th, 2022

Le 28 juin 2022

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
Ms. Indra Maharaj
Mr. Randall Kahgee
Dr. Marcel Lacroix

M^{me} Rumina Velshi
D^r Sandor Demeter
M^{me} Indra Maharaj
M. Randall Kahgee
M. Marcel Lacroix

Registrar:

Greffier:

Mr. Denis Saumure

M^e Denis Saumure

Senior Counsel:

Avocate-principale :

Ms. Christina Maheux

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via videoconference / par vidéoconférence

--- Upon commencing on Tuesday, June 28, 2022

at 9:00 a.m. / La réunion débute le

mardi 28 juin 2022 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 our participants today are located in many different parts of the country. I will pause for a few seconds in silence so that each of us can acknowledge the Treaty and/or traditional territory for our locations. Please take this time to provide your gratitude and acknowledgment for the land.

--- Pause

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

I would like to introduce the Members of the Commission that are with us today remotely. Welcome to Dr. Sandor Demeter, Ms. Indra Maharaj, Mr. Randall

Kahgee, Dr. Marcel Lacroix.

A special welcome to our newly appointed Commission Member, Dr. Victoria Remenda, who is joining us as an observer for this meeting.

Ms. Christina Maheux, Senior Counsel to the Commission, and Mr. Denis Saumure, Commission Registrar, are also joining us remotely.

As always, I will begin with a safety moment.

Today's Safety Moment is about Mosquito Safety. Now that summer is here, let's talk about mosquitoes.

Mosquitoes are responsible for over 725,000 deaths a year worldwide. That number is more than the deaths caused by humans, dogs, snakes, roundworms, tapeworms, crocodiles, hippos, elephants, lions, wolves and sharks combined on an annual basis.

Mosquitoes kill by passing diseases on to other carriers such as humans and sometimes the carriers themselves can pass diseases on to others. Examples of diseases carried by mosquitoes are the West Nile Virus, the Zika Virus and malaria.

Here are some tips to prevent mosquito bites and reduce the chance of disease transmission:

- Use insect repellent to keep mosquitoes

away from you.

- Wear long sleeves and pants to cover your skin.
- Spend more time indoors when mosquitoes are prevalent.
- Remove standing water from around your home or work areas.

These prevention methods are also effective against other insect bites and diseases such as the Lyme Disease carried by ticks.

With that, I will turn the floor to Mr. Saumure for a few opening remarks.

Denis, over to you.

MR. SAUMURE: Thank you, President Velshi.

Bonjour, Mesdames et Messieurs.

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

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 this proceeding 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. During the question period, if you wish to provide an answer or add a comment, please use the "Raise 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 June 21, 2022, for the list of items to be presented today. All of the Commission Member Documents listed on the agenda are available on the CNSC website.

Madame Velshi, présidente et première dirigeante de la CCSN, va présider la réunion.

Madame Velshi.

CMD 22-M18.A

Adoption of Agenda

THE PRESIDENT: Thank you.

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 22-M18.A.

Do we have concurrence?

For the record, the agenda is adopted.

CMD 22-M19

**Approval of the Minutes of Commission Meeting
held on March 24, 2022**

THE PRESIDENT: The minutes of the meeting held on March 24, 2022, were approved secretarially on June 17, 2022. The approved minutes are available upon request to the Registry and will be available on the CNSC website at a later date.

The first item on the agenda for today is the Status Report on Power Reactors, as outlined in CMD 22-M20.

I note that we have representatives from the nuclear power industry and CNSC staff joining us for this item. Please identify yourself before speaking.

I will turn the floor to Dr. Viktorov.

Dr. Viktorov.

CMD 22-M20**Oral presentation by CNSC staff**

DR. VIKTOROV: Thank you.

Good morning, Madam President and Members of the Commission.

My name is Alex Viktorov. I am the Director General of the Directorate of Power Reactor Regulation.

The Status Report on Power Reactors, CMD 22-M20, was finalized on June the 13th. The following are updates reflecting changes since that time.

For Bruce, Unit 2 is currently operating at 30 percent of full power and is returning to full power following a planned maintenance outage.

For Darlington, Unit 2 is currently in a forced outage following a turbine trip. This event will be reportable to the CNSC under the requirement of REGDOC-3.1.1.

On the 22nd of June, the CNSC's Executive Vice-President and Chief Regulatory Operations Officer, Mr. Ramzi Jammal, authorized the removal of the first regulatory hold point for the Molybdenum-99 project. OPG is now authorized to proceed with installation of equipment for the Mo-99 Isotope Irradiation that will modify the

containment boundary during the next planned outage of Unit 2.

For Pickering, Unit 4 has currently returned to full power.

Related to the KI Pill Working Group, the signatories met on the 20th of June to discuss the province's concerns with the scope and objectives of Phase II on the Working Group. The Office of the Fire Marshal and Emergency Management -- which is currently known as Emergency Management Ontario -- and the Ministry of Health are proposing to capture the Phase II objectives under their own initiatives and to align them with the PNERP update cycle. The Working Group would be utilized by the province as a forum for discussion and input. In accordance with the Working Group Terms of Reference, any changes to the Terms of Reference need to be discussed and approved by the signatories. Thus, CNSC staff have asked the province to formally present their proposed changes and the path forward. Once the proposal has been submitted and discussed with the signatories, CNSC staff will update the Commission.

Emergency Management Ontario is unable to attend this Commission meeting but indicated they could attend a future meeting to clarify their proposal.

This concludes the Status Report on Power

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

THE PRESIDENT: Thank you, Dr. Viktorov.

I will now open the floor for questions from the Commission Members to CNSC staff and licensees and we will start with Ms. Maharaj, please.

Ms. Maharaj, we can't hear you.

Okay, we will wait while she figures that out and we will move to Mr. Kahgee, please.

MEMBER KAHGEE: Thank you very much for your presentation this morning. I have no questions at this time.

THE PRESIDENT: Okay.

Dr. Demeter.

MEMBER DEMETER: Good morning. Thank you for the presentation.

The only observation I think, for the record, is the KI Report, I think it's important to note the timelines. The singular request from the Toronto School Board came in 2018. The plan requires Commission approval to continue to operate beyond December of 2024, which is a year and a half from now. The utility of the decision of this Panel or this process will diminish as time goes on and I just wanted to note that it has been a protracted procedure to deal with a singular request. I

understand that you want the request in the capacity of the larger picture, but the utility of the decision will diminish considerably as time goes on.

THE PRESIDENT: Dr. Viktorov, did you want to respond to that?

DR. VIKTOROV: Alex Viktorov, for the record.

We take the point, absolutely. We appreciate that the ongoing delays will diminish the utility of any actions taken. Unfortunately, the pandemic entered in and now the province seems to propose a slightly different approach which may, again, influence the timeline. Nevertheless, CNSC staff remain assured that, as confirmed by Phase I outcomes, the currently existing provisions are generally adequate. They perhaps may be improved, which was the aim of Phase II, and staff will be committed to pursue this avenue.

THE PRESIDENT: Okay. I see Parisa Mahdian has her hand up. Did you wish to add anything?

MS. MAHDIAN: Good morning. Yes. For the record, my name is Parisa Mahdian. I am OPG's Senior Manager of Projects, Emergency Management.

I can confidently affirm that we continue working with other signatories and need their support on this matter, but OPG is committed to working with our other

stakeholders on the KI Working Group.

THE PRESIDENT: Thank you.

Dr. Lacroix.

MEMBER LACROIX: Yes. Thank you very much.

This is not a request, it's just a wish. Next November, staff will present an update to the Commission on the progress of the work done by Bruce and OPG on the Hydrogen Update Model and I would appreciate if staff could provide us with this update in an appendix that details the -- well, that provides the mathematical details of the model and also of the analysis, if it's not too much to ask.

THE PRESIDENT: Thank you, Dr. Lacroix.

Dr. Viktorov.

DR. VIKTOROV: Alex Viktorov, for the record.

Indeed, staff is working to provide their as detailed update as we can at this time and the currently planned date is November, the Commission meeting in November. At this time, Boyce Industries and the CNSC staff will be providing the current status of work completed and the evaluation as well as any safety implication over this work. Again, CMDs will be provided well in advance of the Commission meeting, as per process.

THE PRESIDENT: Right, but Dr. Lacroix has asked for some more details in the CMDs around the modelling and we just want reassurance that that request can get accommodated, please.

DR. VIKTOROV: Point taken and it is probably more for the industry, who will be really providing the update on their modelling, but we will make sure it's available. Thank you.

MEMBER LACROIX: Okay. Thank you.

THE PRESIDENT: Thank you.

Ms. Maharaj, back to you.

MEMBER MAHARAJ: Thank you, Madam Velshi.
Are we good now?

THE PRESIDENT: Yes, we are.

MEMBER MAHARAJ: Excellent.

I did have one quick question about the Pickering Unit 4 report. You mentioned, Dr. Viktorov, that there was a fuelling deficit that was causing a shutdown. Can you identify or has it been identified what the cause of the fuelling deficit was? How did that happen?

DR. VIKTOROV: Alex Viktorov, for the record.

I trust OPG will be able to supplement, but a fuelling deficit is a regular occurrence. It may happen essentially due to two reasons.

A fuelling machine is taken out of service for scheduled maintenance, so the fuelling machine wouldn't be available and a fuelling deficit would build. But that's planned, well designed for analyzed conditions.

And also, a fuelling machine may become unavailable in an unplanned fashion due to some malfunction or failure, but again, up to a certain extent, the fuelling deficit is a condition that is well understood and allowed by operating conditions.

The exact reason of this particular situation, I will request OPG to comment.

THE PRESIDENT: I see Mr. Rogers has his hand up for that, so over to you, Mr. Rogers.

MR. ROGERS: Yes. For the record, David Rogers, Director of Operations and Maintenance at Pickering Nuclear.

Yes, Dr. Viktorov explained core conditions quite well with fuelling. Generally we fuel two channels per shift to maintain core reactivity stable and there are times when we do take planned fuelling machine outages.

This particular outage on Unit 4 was for fuelling machine reliability work and we do planned derates as per the fuelling machine reactivity management status as per our procedures and our fuelling physics engineers.

This particular outage was, I said, for fuelling machine equipment reliability work and the west transfer mechanism machine in particular, and that outage went one day longer than planned -- excuse me, two days longer than planned as we had a leak on a west transfer mechanism ram seal that we had to replace on the way up to restore it to full functionality.

And then what we do to restore reactivity is we fuel up and then we raise power as the reactivity allows and then we reach steady state again and 100 percent full power. So it's very well proceduralized. Fuelling physics engineers monitor the core, as do the licensed operators. That was our fuelling machine outage.

MEMBER MAHARAJ: Thank you very much.

THE PRESIDENT: Okay. Well, thank you, again. Thank you, Dr. Viktorov, for the update and thank you to our industry participants as well.

CMD 22-M38

Written submission from CNSC staff

THE PRESIDENT: We will move to our next item on the agenda and this is for an Event Initial Report filed by CNSC staff regarding an exceedance of copper discharge criteria in plant effluent for the Canadian

Nuclear Laboratories Port Hope Project Wastewater Treatment Plant.

I note that CNSC staff and representatives from CNL are available for questions.

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

MEMBER LACROIX: Thank you, President Velshi. Yes, I do have three quick questions for CNL.

The first question is that the corroded brass components are on the treated effluent side and I was wondering, where does the effluent go once it has been corroded, where is it discharged?

MR. HUGHEY: Good morning. Mark Hughey, for the record. Thank you for that question.

The components are, as you said, located on the downstream side. I'm going to ask Mark Owen, our Director of Waste Operations, to explain the technical aspects of that system.

MR. OWEN: Hi. I'm Mark Owen, Director for the wastewater treatment plants in the Port Hope area.

The final effluent is treated through our process treatment system, through the precipitation and the ROs, and it goes to a treated effluent tank. The root that was contributing the contamination was taking that clean

treated effluent and recirculating it through a cooling loop for the evaporator blower. So the water that had already been treated, close to distilled water properties, was then passed through this loop, was picking up the copper and zinc from the brass components in that cooling loop and returning it back to the final effluent tank. It was the loop that was doing this. That effluent is then discharged through a pipeline to Lake Ontario.

MEMBER LACROIX: Okay. Did you estimate the volume of discharged water in Lake Ontario that has been contaminated with an exceedance of copper?

MR. OWEN: This water is -- we take a weekly composite sample. So for the complete week, the volume would be just over 2,500 cubic metres of water.

MEMBER LACROIX: Okay. Third question, final question. There must be a very good reason for adding these components made of brass. Could you use another material that is less prone to corrosion?

MR. OWEN: The reason for them being made of brass is that they are a common piece of equipment, brass only valve. We have taken this loop and taken it out of its recirc loop and we are now discharging the cooling water back to the front end to be treated while we get the replacement parts, which will be stainless steel.

MEMBER LACROIX: I see. Okay. Thank you.

MR. OWEN: Not just those valves, but we have looked through the whole process for more yellow metal, anything with copper in it, bronze as well, and we will be removing all yellow metal from our treatment system.

MEMBER LACROIX: I see. Okay. Thank you very much.

THE PRESIDENT: Thank you.

Ms. Maharaj?

MEMBER MAHARAJ: Thank you, Madam Velshi. I just have one question.

When I looked at the amount of the exceedance, it was significant. Did it happen all at once or was there a gradual increase as the coating on the brass components destabilized or corroded and the copper and zinc would be released into the water? Was there an earlier opportunity to identify is really what I am after here.

MR. HUGHEY: Mark Hughey, for the record.

I know Mark can answer this question a little better than I can. However, we did not see any indication early on. We do not have a system that would detect that corrosion. They were working fine, there was no sign of corrosion, and then on the one sample we began to see a spike in the levels. So it was almost immediate when it started to happen.

MR. OWEN: Yes. The previous week's composite sample showed no indication whatsoever that we were going to have this problem. We were operating at lower flows, so we were operating with an evaporator on and off, we didn't need both evaporators. We believe when we brought the evaporator on, we sent a slug of the copper and zinc into the final effluent tank.

As Mark said, we closely monitor the discharge from the ROs, make sure they're in compliance using connectivity to make sure the membranes are still solid, but this recirc was not an item of concern up until we had that spike. There was no indication in any of the composite samples before this.

MEMBER MAHARAJ: If I could just ask one follow-up question to help me understand a little better.

So then the effluent that would have been in contact with these brass fittings or brass pieces of equipment, it doesn't sound like it's in a continuous discharge where the grab samples would catch it as you go along. Is it being held and then the grab samples are taken once a week? I'm missing -- unless this was a contamination or an impact by one particular valve, I'm struggling to understand how it would have been a zero-to-100 situation.

MR. OWEN: Mark, can I answer that one?

MR. HUGHEY: Mark Hughey, for the record. Yes, Mark Owen, please answer that question.

MR. OWEN: There are two brass solenoid valves on the cooling loop. Each of the evaporators has the two brass solenoid valves on their cooling loops for this evaporator blower. The final effluent that gets discharged to the lake is a continuous discharge, but we take a composite sample. That means there's a machine that takes a sample around every 15 minutes, a grab sample, and all those little grab samples add up to a composite. So that is recorded on a weekly basis and then sent out for analysis. There is no sampling of the small cooling loop.

MEMBER MAHARAJ: Okay. So that helps me. So your composition samples are compiled essentially for a week. So you caught the first week of exceedance, which could have been happening over the course of that week?

MR. OWEN: Yes. And right after catching this, we took that loop offline. The next composite sample went back to normal, with no copper or zinc issues whatsoever.

So as to the treatment system, the main process system was working fine, the membranes were working, doing all the things that catch the contaminant concern. We isolated that loop, did some measurement after

isolating it, and we found just leaving water sitting there we had elevated copper and zinc. So we are working to address that cooling loop.

MEMBER MAHARAJ: Super. That helps.

Thank you.

THE PRESIDENT: Thank you.

Dr. Demeter, please.

MEMBER DEMETER: Thank you very much. My questions have been answered.

THE PRESIDENT: Mr. Kahgee?

MEMBER KAHGEE: Thank you very much. I think most of my questions have been answered.

Just going back to when you had referred to you're going through the process now of removing yellow metal, as you called it, what's the timeline for that?

MR. HUGHEY: Mark Hughey, for the record.

The timeline for that is we have ordered -- we will order in those parts to be delivered within three days, and we will retrofit that cooling loop the early part of July.

MEMBER KAHGEE: Okay, thank you.

THE PRESIDENT: Okay. Very good. Thank you very much, representatives from CNL, for participating and responding to our questions today. Thank you.

We'll move to our next item on the agenda,

and this is for a decision from the Commission to approve Regulatory Document REGDOC 1.1.2, on *Licence Application Guide: Guide to Construct a Reactor Facility*. And I'll turn the floor to CNSC staff for their presentation.

Ms. Beaton, the floor is yours.

CMD 22-M23/22-M23.A

Oral presentation by CNSC staff

DR. DUCROS: Caroline Ducros, for the record.

I will begin. Bonjour Présidente Velshi et membres de la commission. For the record, my name is Caroline Ducros, and I'm the director general of the Directorate of Advanced Reactor Technologies.

With me today are my colleagues Lynn Forrest, the director of Regulatory Framework Division, Sarah Eaton, the director of Advanced Reactor Licensing Division, and Dr. Doug Miller, subject matter expert in reactor licensing at the CNSC.

In addition, we are joined by several CNSC staff available to support and answer any questions you might have. Next slide, please.

The CNSC is committed to maintaining a regulatory framework that is modern and aligned with

national and international standards and best practices while taking into account the Canadian context. To that end, CNSC staff are here today to present Commission Member Document 22-M23 and request the Commission approve this regulatory document related to licensing the construction of new reactor facilities.

Information in support of this request is provided in this presentation and in the CMD which was provided to the Commission. The CMD is also available on the CNSC website for this Commission meeting.

I will now pass the presentation to Lynn Forrest.

MS. FORREST: Good morning. Lynn Forrest, for the record. I am the director of the Regulatory Framework Division.

This slide provides an overview of what we will be presenting today: an overview of the CNSC's reg. framework and the process for developing regulatory documents; the purpose and scope of REGDOC-1.1.2; the public consultation and engagement activities that we undertook in developing this document, and the key issues that were raised; and finally, our conclusion and recommendation.

This slide provides a quick view of the CNSC's regulatory framework.

It starts at the top with our enabling legislation, the *Nuclear Safety and Control Act*.

In the second tier, the CNSC has 13 regulations which set out the high-level legal requirements that licensees or applicants must meet in order to obtain or retain a licence.

Then we have the licences and certificates with facility and/or activity-specific requirements of licensees. These are also legally binding.

Of course, the largest segment in red represents the CNSC's REGDOCs as well as accredited standards, such as those published by the CSA and ISO.

REGDOCs provide greater detail than regulations to clarify the CNSC's regulatory requirements and provide guidance as to how the requirements may be met. REGDOCs are approved by the Commission, and the Commission may choose to reference REGDOCs in the licensing basis. Standards may be referenced in REGDOCs if the CNSC chooses to further enhance the requirements and guidance information provided.

The CNSC is committed to continuous improvement of the regulatory framework. Comments are welcome at any time, and all REGDOCs are considered to be evergreen.

Licence application guides are regulatory

documents that provide an overview of the CNSC's expectations regarding the information to be submitted in support of a particular type of application. These documents are structured according to both the type of regulated facility or activity and the licensing stage or stages that the guide encompasses.

Most licence application guides do not contain new requirements. They suggest the information that should be submitted to support a licence application. As much as possible, they direct the applicant to details about requirements and guidance in other regulatory documents.

The CNSC structures its regulatory documents according to the framework shown here. So you'll see there are three categories of REGDOCs.

"Regulated Facilities and Activities" articulate the basic requirements in submitting a licence application, like the guide we're looking at today, for each of the facility types of nuclear activities. These REGDOCs then point to other REGDOCs in categories 2 or 3 that contain the applicable requirements or guidance. For example, a Class I reactor facility would be required to meet requirements in many other REGDOCs, such as 2.1, 2.3, 3.1, 3.2, et cetera.

"Safety and Control Areas" is the second

category, which applies across facilities and activities consistent with the SCAs in our licensing and compliance framework. You'll see the 14 SCAs.

And the third category is "Other Regulatory Areas," which includes reporting requirements, Indigenous and public engagement, and matters of Commission proceedings.

So this slide shows where the document presented today, in red, fits within the document framework within category 1.1 for reactor facilities.

In addition to this REGDOC, this reactor facilities series also includes licence application guides that are not shown here in the detail, addressing site evaluation and site preparation, one on operating, a draft document for decommissioning that is being prepared, and a REGDOC providing supplemental information for small modular reactor proponents.

So this slide describes the CNSC's well-established REGDOC development process. It's an iterative process, beginning with regulatory policy analysis, where the approach to a regulatory issue is determined. In the case of a regulatory document, the output of analysis includes the scope and purpose of the new or amended document, the nature of the requirements and guidance that will be included, and resolution of any

challenging issues. This enables development of the draft document, which is posted for public consultation.

In cases where a significant number of or particularly notable comments are received, follow-up with commenters may be undertaken, including possible workshops. The feedback from the consultation process is used to develop the final draft, which is then presented to the Commission for decision. Commenters were sent this draft document as well as the detailed comments tables well in advance of this meeting.

The REGDOC presented today has followed this process.

The update to this licence application guide clarifies the requirements and provides guidance on applying to the CNSC for a licence to construct a reactor facility. This encompasses both large and small modular reactors. Following the information in this regulatory document will guide applicants to submit the appropriate information to the CNSC to demonstrate, one, that they are qualified, and two, that they will make adequate provision for the protection of the environment, the health and safety of persons, the maintenance of national security and take measures required to implement Canada's relevant international obligations.

This REGDOC outlines the required

administrative information for submitting the application to the CNSC as well. It also clarifies that the licence application and its supporting documents would become the safety case for the reactor facility.

So it's important to know a bit about the history of the document. The content in this document has been publicly available for over a decade, first published in 2011 as RD/GD-369.

In 2019, that document was republished as REGDOC-1.1.2 to bring it into the CNSC's regulatory document framework structure. At that time, updates were limited mostly to format. Internally, we called this a "rebrand."

At the time, we knew that more work would be required to modernize the document to meet the CNSC's evolving standards for licence application guides and to adapt it to be more flexible in the context of emerging SMRs.

I'll now turn the presentation over to Sarah Eaton.

MS. EATON: Thanks very much, Lynn.

Sarah Eaton, for the record. I'm the director of the Advanced Reactor Licensing Division.

In developing the document in front of you today, we have updated the previous version to restructure

its information into the Safety and Control Area framework to meet the CNSC's current standards for licence application guides. We have also removed requests for information that is more appropriately gathered at the licence-to-operate stage. This information is already addressed in Regulatory Document 1.1.3, *Licence Application Guide to Operate a Nuclear Power Plant*.

This new version provides enhanced clarity on additional considerations for implementing risk-informed decision-making, including the use of hold points, which is a common regulatory practice at the CNSC.

The document also clarifies the information that needs to be submitted for a licence to construct application, including how this information can be submitted over a defined period of time to allow the applicant to further the design. To provide additional clarity, the document provides further details on the application of a risk-informed graded approach and the ways in which applicants can use alternative approaches to meet requirements.

Here are the CNSC's safety and control areas. This licence application guide focuses on those SCAs for which information is most important when seeking a licence for construction. These SCAs are shown in bold letters on the slide. During the construction phase, the

most extensive information is regarding the physical design and safety analysis of the proposed reactor facility.

Public consultation is key to the process for revising regulatory documents. The public consultation period was from October of 2020 to January of 2021. The CNSC received 88 comments from industry. There were no comments from members of the public, environmental groups, or Indigenous nations and communities. After posting all comments received, no further feedback was received.

It's not unusual to receive few or no comments on licence application guides from the public, environmental groups, or Indigenous nations and communities, as there are no new requirements.

In November 2021, CNSC staff held a workshop with industry commenters, including Bruce Power, Canadian Nuclear Laboratories, Global First Power, New Brunswick Power, and Ontario Power Generation. Following the workshop, staff revised the document, which brings us today, where we are asking the Commission to approve version 2 of the Licence to Construct application guide.

As noted in the previous slide, a workshop was held with industry. The key themes from the workshop are shown on this slide, and I will elaborate on these themes in the next four slides.

During the workshop, CNSC staff provided a

revised draft document which participants reviewed and discussed. It was noted by industry during the workshop that all comments had been addressed in the revised version.

The first theme was regarding duplicated content. Industry stakeholders expressed concern that some requirements and guidance were duplicated from REGDOC-1.1.3, *Licence Application Guide to Operate a Nuclear Power Plant*. Industry also highlighted uncertainty regarding whether the expectations were the same for both documents or what the differences might be.

In response, CNSC staff revised the licence application guide to be clear on the scope of construction activities and removed duplicated content.

Industry commenters also expressed concerns with the application of a risk-informed graded approach to small modular reactors, or SMRs. Stakeholders felt that a number of SMR designs have reduced risk profiles due to enhanced safety features, and this justifies a simplified regulatory approach.

In response, staff revised the document and added additional information on the risk-informed graded approach.

Given the wide range of reactor technologies being considered, it's important to note that

these technologies have risk profiles that may vary significantly, depending on the design. CNSC regulations allow flexibility in how applicants meet requirements. Our regulatory framework allows applicants to propose alternative approaches based on a risk-informed graded approach. The applicant must provide adequate justification and demonstrate how they will maintain safety throughout the lifecycle of the facility.

The third concern raised by industry stakeholders was regarding the level of detail required. Stakeholders felt that the detailed information required may not be available at the time of making the construction licence application.

In response, CNSC staff revised the document to focus on the regulatory requirements for construction. The CNSC's licence application process is integrated across the lifecycle. Applicants must plan for each safety and control area at every lifecycle stage, and that plan becomes more detailed as the facility progresses through design, construction, and operation.

Applicants can use a risk-informed graded approach based on the reactor design and the specific lifecycle phase that is being applied for. Where there are design uncertainties, conservative engineering judgment is expected.

The level of detail required for a licence to construct application is expected to be project-specific and based on the activities covered under the licence application. The revised document before the Commission provides the applicant with the information that must be provided and also the flexibility to provide additional information if available at the time of application.

The final concern raised by industry was regarding the requirements and guidance in the management system section, particularly the "intelligent customer" concept.

CNSC staff revised the document in response to this concern. Staff replaced "intelligent customer" with "informed customer," to harmonize with international best practice. The term "oversee" was used to replace "supervise," to better align with CSA standard N286-12, *Management system requirements for nuclear facilities*.

I will now pass the presentation back to Dr. Ducros.

DR. DUCROS: Thank you. Caroline Ducros, for the record.

The CNSC's REGDOCs are evergreen, and comments are welcome at any time. This draft REGDOC realigns existing content into the Safety and Control Area

framework. It clarifies requirements and guidance and was developed through an iterative process with significant stakeholder engagement.

Based on our conclusions, CNSC staff therefore recommend that the Commission approve this REGDOC.

Thank you for your attention, and we remain available to answer any questions you may have.

THE PRESIDENT: Okay. Thank you, Dr. Ducros, Ms. Forrest, and Ms. Eaton, for the presentation.

And I know we've got representatives from the nuclear power industry also available online to answer an questions the Commission members may have.

And so I'll open the floor for questions, and we'll start with Mr. Kahgee, please.

MEMBER KAHGEE: Good morning. Thank you very much for your presentation.

I just want to get a better understanding with respect to the public and Indigenous engagement. If I heard you correctly, it's not -- you generally don't see a lot of engagement on these REGDOCs *per se*, if I heard you correctly.

In terms of disseminating information with respect to the REGDOCs, does the CNSC staff undertake to

make sure that plain language documents are available that specifically, for example, highlight the specifics of what the actual REGDOC is about? Is that done in terms of for the public and Indigenous engagement?

DR. DUCROS: Caroline Ducros, for the record, director general of the Directorate of Advanced Reactor Technologies.

I am going to pass it to the regulatory framework specialist, Lynn Forrest, to give you an answer on how we approach the engagement and the plain language question.

MS. FORREST: Thank you, Caroline.

So the CNSC staff are always open to discussing REGDOCs and the licence application guide for this licence to construct a reactor facility and provide feedback and answer questions.

In the case of this document, we followed our usual practices for communicating and promoting engagement opportunities to get involved in the review and comment of the REGDOC, including the notifications to the info subscribers, which includes many Indigenous nations and communities. And no specific interest was expressed by the nations and communities.

We can't really speculate on why groups don't get involved, but I think we should -- I should

underline that this document doesn't contain any new requirements or any new information. It's information that already existed. And where the community groups would be most interested is in the category 2 and category 3 areas of the regulatory framework. That's the best -- that's what I can say.

It's not just Indigenous groups, but the public did not engage either.

DR. DUCROS: Caroline Ducros, for the record.

Perhaps it's also worthy of sending it to the Indigenous engagement specialist, Mr. Adam Levine.

MR. LEVINE: Good morning. Adam Levine, for the record, team lead in Indigenous Relations and Participant Funding.

So yeah, we always make sure that communities are aware of all the different regulatory documents and processes that we have ongoing. We have a number of different forums for that through our ongoing engagement terms of references and different presentations and community engagement sessions.

This one in particular was not raised as something of particular interest or concern at this time, but we're always committed to providing more information and engaging specifically on this REGDOC.

But usually, communities, they express direct interest of course in specific projects where this REGDOC may apply, where there is a licence application for a nuclear power facility. And of course, that would trigger our consultation requirements and processes and ensure that any affected communities were deeply involved in that and that they're aware of all the requirements and regulatory documents that go into that particular application.

So we didn't hear any specific interest on this, but we don't take that as zero interest. So we'll continue engaging and providing information to communities and always happy to provide more information upon request.

MEMBER KAHGEE: Thank you, Mr. Levine. That was actually a good segue into my next question. I think you've covered some of it. I'm just going to flip it slightly.

You talked about not hearing specific concerns being raised by either the public or Indigenous communities that you're engaged with. Looking at just the five stakeholders that were part of the workshopping, I can think of at least two or three territories on which those licensees operate in. And I'm certainly aware that CNSC has engagement protocols, for lack of a better description, with those communities.

Was there an effort to engage specific to those protocols with those communities as opposed to an expectation that Indigenous communities would first bring those concerns forward? Was there an opportunity for CNSC to go to those communities and say, This is something we're doing. Do you have any specific concerns or would you like to discuss them?

DR. DUCROS: Caroline Ducros, for the record. I'll begin, and then I'll pass it on to Mr. Adam Levine.

I just wanted to put some clarification to the actual scope of the revision to the REGDOC in that it -- the REGDOC itself is a licence application guide that has not introduced any new requirements from the previous version. What it has done, really, is scope the *Licence Application Guide* to specifically those requirements that are necessary for the *Licence to Construct* phase, and so by doing that, we removed some duplication for the *Licence to Operate*.

And with the REGDOC framework, the important thing is that each REGDOC points to the other, so there isn't anything new in this regulatory document version, it's just packaged so that it specifically points to *Licence to Construct*.

Having said that, though, your impression

is extremely important and I would pass it to Mr. Levine to talk about the groups that may have interest.

MR. LEVINE: Adam Levine, for the record.

Sorry, could you just repeat the Question? My internet cut out for a second there, so if you could just repeat that? Sorry.

MEMBER KAHGEE: You started in your earlier response, you started to segue into my next question and I think you covered some of it. I just wanted to flip it a bit because you talked about really, you know, you didn't hear specific concerns being raised by Indigenous communities.

My question was, knowing that -- when I look at the five stakeholders who are part of the workshop and who provided comments, I'm certainly aware that, at least with respect of territories those stakeholders operate in, that the CNSC does have existing protocols, engagement protocols, with those communities.

I'm just wondering if CNSC engaged specifically with those communities, for example by saying, 'Hey, we're doing this review of the REGDOC, do you have any specific concerns?' as opposed to putting the onus on the communities to, you know, go seek out this this information for themselves and raise those questions?

I'm just wondering if CNSC engaged

specifically with communities on this issue pursuant to those protocols?

MR. LEVINE: Yes, thank you very much, Mr. Kahgee.

Yeah, Adam Levine, for the record.

So, yes, what we do with those communities who we have terms of reference for long-term engagement with, which includes many of the communities that would be potentially interested in this REGDOC because they have direct interest in operating nuclear power facilities, including the Saugeen Ojibwe Nation, Historic Saugeen Metis and the Metis Nation of Ontario, Curve Lake First Nation and the Mississaugas of Scugog Island First Nation. What we do is, every year we provide a list of all the upcoming regulatory activities and processes that may be of interest, and we continue to update that list throughout the year, including REGDOCs like this one, and provide then options of how we want to prioritize the communications.

So, to answer your question, yes, we did provide, you know, specific information about all the upcoming REGDOCs, including this one, and opportunities to get involved.

And we also encourage all the communities to sign up to our Info Subscribers List, which many do, where they get the information live when information is

available, when there's different webinars or comment periods, et cetera, and then leave that then in the community's hands to let us know which ones they would like to prioritize and focus on, and this wasn't one of the ones that was chosen as a priority document to discuss. But we're always open to adding that back on the list if someone flags that for us.

MEMBER KAHGEE: Thank you very much for that, Mr. Levine. Just one general follow-up question and I think I probably know the answer, but I'm going to ask it anyway. It's just in the context of the workshopping.

Was there an opportunity or an invitation extended to members of the public, or to Indigenous communities to participate in the workshop that was held?

DR. DUCROS: Caroline Ducros, for the record.

The workshop was specifically targeted at those who had provided comments, so I can pass it to Lynn for confirmation on that, but my understanding is that those who participated in the workshop were those that were most directly impacted given that it's a -- well, maybe that's not the best way of saying it. Given that it's a *Licence Application Guide* for potential proponents, those were the requirements that we saw comment and those are the ones that we workshopped. But maybe Lynn Forrest can

provide some more information.

MS. FORREST: Lynn Forrest, for the record.

Yes, I don't have -- not much more to add other than it is true that we hold workshops with commentors, and that is why the other groups were not specifically requested.

On other documents we have received comments from the public or Indigenous groups and we do send out an invitation to meet with us if they commented on the document per se.

Industry does like to meet together as a group in a workshop. We know that the members of the public and Indigenous groups may want to meet differently, so we always reach out, when they comment, to ask them how they would like to see how we disposition their comments and engage with us, whether it be through a meeting or something else.

DR. DUCROS: With that -- Caroline Ducros, for the record.

I would like to pass it to Sarah Eaton to talk about what some of those other mechanisms were that didn't (stream lost / diffusion perdue) the workshop.

MS. EATON: Thanks very much, Caroline.
In our regular webinars and meetings

with -- with Indigenous Nations and communities, we talked about the Regulatory Document revision and the progress of that revision and we didn't receive any specific comments on the Regulatory Document revision, so it was an opportunity for us to pose a wider audience for if there are any questions or concerns.

THE PRESIDENT: Thank you for that. Dr. Lacroix, please?

MEMBER LACROIX: Thank you. Thank you very much for the presentation as well as for the submission -- very detailed.

Many of the comments that are made and many of the issues that have been raised in the document concern the development of new reactor technologies, namely, SMRs, and I was wondering from the regulatory perspective as well as from the proponent's perspective, do you foresee challenges or barriers to the practical implementation of this new REGDOC?

DR. DUCROS: Caroline Ducros, for the record.

One of the reasons why over the last decade or so we have been putting a concerted effort into looking at the regulatory document framework was to ensure that the way it was written was clear for different types of proposed projects, and that there was clarity around the

risk informed and the graded approach, so that it was a framework that was suitable for applications from different types of facilities and activities, broader than the traditional nuclear power plants.

So, I would pass it to Dr. Doug Miller to give you some more information on, in particular, this REGDOC.

DR. MILLER: Good morning. Doug Miller, for the record, Lead Technical Advisor, Directorate of Advanced Reactor Technologies.

The challenges and interesting features of novel reactor technologies can be addressed through the application of the risk informed graded approach. So, as they walk through addressing the criteria in the application guide and the regulatory documents that the guide points to, where there may be some differences they can apply, they can submit suitable information to demonstrate that safety objectives are met. And, there's provisions in our regulatory framework to propose alternatives.

So, they can go through it and say, 'Well, we have a little bit different design here, or there. And there's the R&D and experimental evidence and modelling that backs up and demonstrates that the provisions of the design, the components, the systems are -- are adequate and

will achieve the regulatory objectives.

MEMBER LACROIX: The way the REGDOC is formulated is it possible that it will evolve as a function of time?

MR. MILLER: Doug Miller, for the record.

Yes. As we gain experience with the applications that are going to come in as we expect, fairly soon, then we would take the feedback, whether there's some, say, maybe some questions or clarity needed to further refine.

We could also embellish in information on application of the graded approach of what kind of information that we're seeking to support a safety case, that the information is credible, relevant, et cetera.

So, yes, there is feedback to always continuously update our regulatory documents.

MEMBER LACROIX: Okay. And --

DR. DUCROS: Caroline Ducros, for the record.

If I may add to that, although we do have a mechanism to continuously update our regulatory documents as we receive feedback, because small modular reactors and innovative technologies are coming at us quickly, we are also exploring other mechanisms to provide clarity such as posting more on our website and other documents, perhaps

white papers, to provide, in the interim, the level of clarity and expectations the CNSC Staff may have.

MEMBER LACROIX: So that's the perspective of the regulator. So, I would like to hear from the proponents, from the licensees or future licensees.

Anybody from Global First Power, or Bruce Power?

THE PRESIDENT: Let's see who is putting their hands up. And we'll start with Ms. Irvine from OBG, please.

MS. IRVINE: Sarah Irvine, Director of Nuclear Reg Affairs for Ontario Power Generation.

So, Ontario Power Generation did participate in the reviewing comment process. And your question is, if we see any practical implementation concerns, and, no, we don't. We are satisfied that the comments we have provided to CNSC Staff on the draft document were incorporated to our satisfaction and don't see any barriers for implementation for our upcoming licence to construct.

MEMBER LACROIX: Okay.

THE PRESIDENT: Thank you. Mr. Burton from Bruce Power?

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

I just want to input and complement Ms. Irvine's comments. I think the big thing Dr. Ducros covered for the proponents or applicants, the big thing in this document is clarity and what we really want to be able to do is, submit a complete application the first time and not have to come back and go through iterative processes, so that I think the process that was done here through CNSC Staff and Ms. Forrest and her team really helped in getting that clarity delivered into the document. So, thank you to the Staff for -- for that work.

THE PRESIDENT: Thank you. Anybody else from potential proponents and the other three participants in the workshop? Have all your concerns been addressed to your satisfaction?

I don't see any hands up, so Dr. Lacroix, I think we can take that as a given, then. Thank you.

MEMBER LACROIX: Okay.

THE PRESIDENT: Maybe just a follow up to Dr. Lacroix' question and Dr. Ducros, your response to that, after we've potentially -- the CNSC has received the first application, is the plan not to wait for comments? Is there kind of a post-implementation review built into our process to actually see are there opportunities for improvement of this regulatory document?

DR. DUCROS: Caroline Ducros, for the

record.

Yes, that is part of the regulatory framework. And I'll pass it to Ms. Lynn Forrest to elaborate.

MS. FORREST: Thank you. Lynn Forrest, for the record.

Yes, we have at minimum a five-year review on documents but that's a set minimum, although I must say, some will go longer because there's no issues at hand. But we are going to be watching carefully over the next two to three years as we get more experience with the different technologies that are out there, and the review of this document will be part of the -- may be part of the SMR readiness project that we are undertaking.

THE PRESIDENT: Okay, thank you. Dr. Demeter, please?

MEMBER DEMETER: Thank you. I have two questions. One is I was trying to get my head around the term, "informed customer." And I did track it back to the IAEA and looked at the definition and you know "customer" infers an agency that procures or provides goods and services. And from CNSC's regulatory point of view these are qualified licensees or qualified operators. From the public point of view, the words, "informed customer" could be quite confusing, so maybe you can help me understand the

history of why that term was chosen and how it's fitting that -- what does it mean when -- I saw the definition but from CNSC's point of view, they're calling this -- these operators informed customers. It doesn't quite make sense to me, so maybe help me understand how the terminology fits.

DR. DUCROS: Thank you. Caroline Ducros, for the record.

Just to put it into context, licensees are responsible and accountable for safety, so the informed customer concept is being developed in a document, like you said, by the IAEA and international regulators to describe the applicants or licensees in-house core capacity for the technical subject matter expertise. And, so with that, we follow the CSA Standard N286 and I will pass it to the management system experts to explain that evolution.

I believe Mr. Pierre Lahaie is on the line.

--- Pause

DR. DUCROS: Okay, I will carry on then. So, the N286 Standard, as I mentioned, emphasises the licensee's accountability for the full lifecycle of activities and the requirement for independent verification of work activities throughout the life of the nuclear facility. And they have to confirm that they meet all

requirements.

So, CSA N286 also has the requirement for verification of purchased services, and the informed customer concept that's being developed evolved in terms of the terminology, partly, I believe, because some of the terminology could have been interpreted a, I believe it used to be, "intelligent customer," and that could have been interpreted derogatorily.

The informed customer, it's not a new requirement. It's simply bringing together the existing regulatory requirements in a coherent basket for the delivery of the licensed activities by the contactors.

MEMBER DEMETER: Okay, thank you.

DR. DUCROS: Oh, and Mr. Cormier is here to elaborate and clarify anything I may have said.

MR. CORMIER: Kyle Cormier, Management System Officer, for the record.

No, I think Dr. Ducros covered that adequately.

I'm available for any further questions.

MEMBER DEMETER: Okay, that helps me a bit. Thank you.

The second question I have, and I appreciate the detailed disposition and the robust review that was in the document.

I wanted to get a sense, based on this is a scalable document from SMRs up to conventional power plants and it's risk informed, and that's scalable, as well. I want to get a sense compared to other international agencies whether they've left this, sorry the small SMRs in a scalable document from SMR to conventional, or whether they have separated them out as a separate entity as a Class-2B kind of thing versus a Class-2 versus a Class-1? So, are we keeping with international standards that small nuclear reactors, SMRs, are in the same scalable document as the conventional ones, or is that sort of the current trend and practise internationally?

DR. DUCROS: Caroline Ducros, for the record.

Recognizing that different jurisdictions have different frameworks, there may be some differences. And Mr. -- or, Dr. Doug Miller will elaborate.

DR. MILLER: Yes, Doug Miller, for the record.

Currently, there's a couple of different practises that are related to the overall approach, regulatory approach by the regulator.

In United Kingdom, for example, the Office of Nuclear Regulation, their criteria is aligned similar, and their regulatory approach is similar to Canada's where

it's more of a goal oriented performance based approach, so their criteria broadly applies to a wider range to technologies, and that applicants can propose how they meet it.

In United States, they have separated out criteria for non-water-cooled reactors, so some of the generation for reactors, they call them the molten salt reactors, the sodium cooled reactors, et cetera. Now, that criteria is derived and adapted from the water-cooled criteria, but they have set up a separate document for that.

So, the criteria is covered. It really goes back to the preference of the -- and the regulatory approach, but there's both out there.

MEMBER DEMETER: Thank you very much. I'm good.

THE PRESIDENT: Thank you. Ms. Maharaj?

MEMBER MAHARAJ: Thank you, Madam Velshi, I just have one small follow-up, and Mr. Kahgee has covered a lot of the territory that I was particularly interested in. And, the question is this, I appreciate you can't lead a horse to water and make it drink, and so when you -- when you put a REGDOC out for consultation to a variety of different entities, people, organizations, they may or may not respond. But then what we hear by the time you get to

the actual application hearings is, from some intervenors you will hear that the -- the standard of application doesn't meet their concerns. And, so that's when they raise their concerns and they say, 'Well, it is insufficient, it's incomplete, it's not detailed,' and you know all the things that we've all heard in those hearings where the intervenor almost -- it's almost too late because the proponent has complied with a REGDOC and then -- then the intervenor tries to identify a gap.

So, my question is, is there a way that you can encourage those intervenors who we probably will hear from, whether they are communities, whether they are environmental groups, whether they are NGOs, is there a different way to engage them so that you get that feedback at the front end and you don't face the criticism at a time when your answer has to be the applicant, the proponent, has complied with our regulations and your concern is now too late. Is there anything that you can do there?

DR. DUCROS: Caroline Ducros, for the record.

I'll start. It's an excellent question and one we ask ourselves all the time, and so we have been expanding the mechanisms that we use to reach out to people, have done a number of nuclear regulator sessions. We have linked some of this communication to the projects

that may be -- that are being proposed or that may be in the future, and we -- as Mr. Levine mentioned, there are terms of reference for some Indigenous Nations and it is discussed on a regular basis with those Nations.

One of the things, in particular, for this -- for REGDOCs in general, and this particular REGDOC that's before you is that none of the requirements have changed. These are requirements that are related to regulations, to the *Nuclear Safety Control Act* and its regulations. And, if anything, what we have done is try to add additional clarity.

But with that, I will pass it to Ms. Sarah Eaton to talk about some of the activities that they have undergone, and just to say that we -- this isn't the end of the discussion; we are always open to feedback.

In terms of what the licence application contains, the *Licence Application Guide* offers a lot of guidance. Staff do use an iterative process if the information is not sufficient for us to do as detailed a review as we need to be able to provide a sound recommendation to the Commission, we won't provide a sound recommendation to the Commission, we will go back and ask for additional information.

In terms of the building trust and really trying to engage, I'll pass it on to Ms. Eaton.

MS. EATON: Thanks very much. Sarah Eaton, for the record.

I think it is important to note that this is the *Licence to Construct* and so before the *Licence to Construct*, we have the *Licence to Prepare a Site*, and so our expectation, and on applicants, is that they are already engaging the public, Indigenous Nations, and communities, well in advance of submitting a licence application. So, we are not showing up at those proceedings with people having questions that are unanswered. And so really, it's there's so much of that front-end work that has to go on to build those relationships to be able to ensure that the information is there. And, so we have a responsibility to do that as well, and we do that through our regular meetings with Indigenous communities and Nations, with our webinars we host providing information as we go out to -- to feed back information to people.

What we find is there isn't really an interest in the regulatory documents, but more so what the application is about. And so we hear a lot of questions on, "Well, what would this application look like? What are they proposing to do?" Those specific pieces.

So, we spend a lot of our engagement more focussing on project-specific questions which would have been individual concerns from various members of the

public, concerns or positive comments. We also receive positive comments from the public on these projects, as well, to get a sense for what does it mean to them. So really the focus that we've seen from our engagement with people has been more so on the projects and not the Licence Application Guide.

MEMBER MAHARAJ: Thank you very much.

THE PRESIDENT: Okay. So I've got a few supplementary questions, and I know you said this particular Guide doesn't introduce new requirements, but when we talk about SMRs, one of the things we hear of course is these are modular, they're going to get manufactured offsite, that the construction activity scope is going to be quite different. Did you not feel a need to add some additional guidance in such areas as manufacturing and how does one ensure that there is adequate oversight of the manufacturing process, or do you feel that the guidance and the responsibilities of the informed customers are sufficient?

DR. DUCROS: Caroline Ducros, for the Record.

One of the good things about the Guide is that it does allow for alternatives to be proposed. And the onus is on the proponent or the applicant to demonstrate that those alternatives meet safety

requirements and that they are at least safety neutral or safety enhanced. With the specifics of your question, I'll pass it to Dr. Doug Miller to talk about those aspects of manufacturing, *et cetera*.

DR. MILLER: Doug Miller, for the Record. The aspects of manufacturing and supply chain are covered adequately through – well, this Application Guide, and then the CSA Standard N286 on management system, as well as there is information in Regulatory Document 2.3.1 on construction and commissioning. So collectively those documents, plus industry practices, provide suitable information governing manufacturing.

There is also, I think, CSA Standard N299 on supply and services, which I think our management system colleagues could further elaborate on, that provide the rules, so to speak, for manufacturing and supply chain.

THE PRESIDENT: Thank you. No, I don't need additional information. That is sufficient.

My second one is the experience in the United States with the SMR application by Oklo to the U.S. Nuclear Regulatory Commission, and the application being rejected as being incomplete, made international news. I wondered, what were some of the learnings from that that were then reflected in this Guide to make sure that whether it's greater clarity that's required or mutual

understanding was factored in? Was there anything of applicability to the Canadian context?

DR. DUCROS: Caroline Ducros, for the Record. The Canadian context is slightly different than the American context. Our application process allows for information to come in a number of packages; however, we do ask that the licensee define the timelines for those packages and the content of them in advance. And so, we do not determine whether the application is sufficient and the level of detail and quality is adequate until we have the full package, and we wouldn't go before the Commission until we've done a detailed review of the entire package.

And that's why I mentioned earlier that there is an iterative process where we can give information requests to the proponent to give us further information. So it's a phased approach that allows us to receive things up until we are ready to do our full analysis and recommendation to the Commission.

THE PRESIDENT: Thank you. And my last question is to OPG. Where the CNSC is expecting a construction licence application in the next few months for the Darlington New Nuclear Project and this Guide has yet to be issued, I wondered if it causes concerns to you on something coming this late and the implication for your application?

MS. IRVINE: Yes, Sara Irvine, for the Record.

Our team has been working closely with Ms. Eaton and Dr. Ducros, working with the draft version since last November, and our licence to construct will be compliant with this new revision should it be approved today.

THE PRESIDENT: Okay. Thank you very much. Thank you to everyone for the presentation, for the responses, and really for a very thorough process for developing this particular REGDOC and the disposition of all the feedback that you've received. And you've got some good insights from Commission members today on how you can even better engage with folks who may not see the relevance of a REGDOC at this stage, but maybe down the road would have wished that they had actually engaged earlier on. So thank you again for that.

We will now move to our next item on the agenda, and this is for a decision from the Commission to approve another Regulatory Document, REGDOC 2.4.4, Safety Analysis for Class 1B Nuclear Facilities, and I'll turn the floor to CNSC staff for their presentation, and I'm not quite sure whether it's Ms. Beaton or someone else who is going to lead the presentation, but over to you, please.

CMD 22-M12/22-M12.A

Oral presentation by CNSC staff

MS. FORREST: Thank you very much, President Velshi. Lynn Forrest, for the Record. Can you hear me? Good. Okay, thank you.

THE PRESIDENT: Yes, we can.

MS. FORREST: I will start out today. Good afternoon – good morning, Members of the Commission. My name is Lynn Forrest, the Director of the Regulatory Framework Division. With me today are Andrew McAllister, Director of the Nuclear Processing Facilities Division, and Dr. Vladimir Khotylev, our lead subject matter expert from the Reactor Physics and Thermal Hydraulic Division, along with many other CNSC subject matter experts.

We are here today to request approval of REGDOC 2.4.4, Safety Analysis for Class IB Nuclear Facilities, which is a new Regulatory Document that contains expectations for the submission of a safety analysis report for Class IB facilities. Next slide, please.

The CNSC is committed to maintaining a regulatory framework that is modern and aligned with the national and international standards and best practices, while taking into account the Canadian context. To that

end, CNSC staff are here today to present Commission Member Document 22-M12 and request approval of this REGDOC. Information and support of this request is provided within the presentation and the written CMD which was provided to the Commission. Today's presentation will follow the structure shown on this slide and is very similar to the structure that you saw previously. Next slide, please.

You saw this slide earlier in the presentation on REGDOC 1.1.2, so I will not talk to it again. It is a view of our regulatory framework at the CNSC. Next slide, please.

Here you see the CNSC's REGDOC framework showing in red that this document is in Category 2 of the regulatory framework under the Safety and Control Areas in the Safety Analysis series.

The document development process used in creating the REGDOC presented today is shown on this slide and is similar to the one you saw earlier. Public consultations are an integral part of the process. After public consultation, as mentioned earlier, we sometimes follow up with commenters, even holding workshops as appropriate.

For this document, a workshop was held with stakeholders who requested in their comments submission to meet with us. At the workshop, these

commenters clarified their comments in order to inform the CNSC staff's considerations in amending the document. We are currently at Step 8, seeking the Commission approval.

I will now pass the presentation along to Andrew McAllister, Director of the Nuclear Processing Facilities Division.

MR. McALLISTER: Thank you, Ms. Forrest. For the Record, my name is Andrew McAllister, and I am the Director of the Nuclear Processing Facilities Division.

Safety analysis is a systematic evaluation of the potential hazards that is associated with the conduct of a proposed activity or facility and that considers the effectiveness of preventative measures and strategies in reducing the effects of such hazards. The Class I nuclear facility regulations require that an application to construct a Class I nuclear facility include a preliminary safety analysis report and an application for a licence to operate that would include a final safety analysis report.

As you can see on this slide, Class IA facilities largely cover similar types of facilities, for example, CANDU nuclear power plants, whereas Class IB facilities present a variety of facilities that differ greatly from reactors and have unique hazards and associated safety related matters.

The Class IB nuclear facilities include, for example, facilities that process nuclear fuel from uranium, thorium, plutonium; facilities that process nuclear substances like tritium, cobalt, and various medical isotopes; waste management facilities that include interim spent fuel storage and long-term waste disposal; and nuclear research facilities like Chalk River Laboratories. As evident from the pictures here, Class IB facilities perform a wide range of licensed activities, from bulk chemical processing of nuclear fuel, like refining and conversion, to precision manufacturing of nuclear fuel bundles, to storage of highly radioactive spent fuel, to processing of medical isotopes in significant quantities.

In light of this wide range of activities for Class IB facilities, conduct of safety analysis is varied, depending on the hazards and types of activities. As a result, CNSC staff assessed that there was a need for a more consistent approach codifying best practices and ensuring alignment of safety analysis with accepted national and international standards, such as the International Atomic Energy Agency's IAEA SSR-4, Safety of Nuclear Fuel Cycle Facilities.

Safety analysis has always been conducted for Class IB facilities in Canada. CNSC staff embarked on

two efforts. The first was for a continuous improvement aimed at improving the quality and consistency amongst the Class IB facilities. The second was to codify the improvements in REGDOC 2.4.4.

The continuous improvement process involved an update of the IAEA Specific Requirement Standard SSR-4 and the development of post-Fukushima CSA standards related to Class IB facilities. Regulatory Document 2.4.4 clarifies the requirements and provides guidance for applicants and licensees to demonstrate the safety of a Class IB nuclear facility, including a safety analysis program which is that managed process that governs conduct of a safety analysis which is a systematic evaluation of the potential hazards, and safety analysis documents, records, and reporting. A draft of REGDOC 2.4.4 was reviewed by international experts during the 2019 IAEA Integrated Regulatory Review Service or IRRS mission and it was noted that publication of REGDOC 2.4.4 would establish the relevant requirements and criteria for fuel cycle facilities. It should be noted that this document is technology neutral and applies to existing and new Class IB facilities.

Draft REGDOC 2.4.4 provides guidance and requirements for safety analysis for Class IB nuclear facilities. The Class IB nuclear facilities described in

the draft document are defined in Section 1 of the Class I nuclear facilities regulations in paragraphs 19(a) and (b) of the *General Nuclear Safety and Control Regulations*. Class IB nuclear facilities that are not included in the scope of this document include, for example, disposal facilities during the post closure phase.

REGDOC 2.11.1, Waste Management, Volume III, Safety Case for the Disposal of Radioactive Waste, addresses the safety assessment for the post closure phase of disposal facilities. In accordance with the graded approach, REGDOC 2.4.4 provides the licensee or proponent an option to propose specific design measures, analyses, or other measures that are commensurate with the level of risk posed if they provide adequate justification.

Requirements and guidance on safety analysis are based on a strong scientific basis. Each requirement in this regulatory document has a link to the IAEA's SSR4, Safety of Nuclear Fuel Cycle Facilities, or the CSA Group's CSA N292 series of standards as they apply to Class IB facilities. Provisions on the conduct of a safety analysis ensure implementation of post Fukushima concepts of safety analysis, such as design extension conditions, whereas keeping the same range of the postulated accidents as had been set before in the CSA N292 series standards.

As part of the conduct of safety analysis, the draft Regulatory Document sets acceptance criteria for analysis of design-basis accidents and safety goals for analysis of design extension conditions, such as the risk from the postulated accident at Class IB facilities is consistent with that of Class IA facilities. Provisions on safety analysis documentation and records are consistent with the current best practices of licensees. Finally, appendices are included in the draft regulatory document to provide further guidance and to complement the information presented in the body of the document.

This slide provides the overview of the timeline for public consultations. As is part of the CNSC's drafting process, the draft document was subject to public consultations periods in 2020 to 2021 for an initial period of 100 days. All comments were carefully considered and dispositioned, and changes were made in a document as a result. Following public consultation, commenters requested an additional workshop with the CNSC to discuss their comments prior to finalizing the document. The CNSC responded by adding an additional step in the process for further consultations to specifically consult on how CNSC had addressed the comments received.

During the consultation period in 2020, 69 comments were initially received and addressed by CNSC

staff. During a follow-up consultation period in 2021 with stakeholders, they indicated most of their comments were addressed by the dispositions provided, but a few additional comments were received. Major themes and requests for clarity on the topics which were raised during both the initial public consultation and the follow-up consultations are presented on this slide and further discussed in the next slides.

This slide presents the first theme of comments received during the consultation period, focussing on the prescriptiveness of requirements. CNSC staff agree that not all Class IB nuclear facilities are "nuclear fuel cycle" facilities. Staff took that into account in the development of this document. The content of the document covers hazards that are applicable to all facilities included in the scope. Where applicable, references made to other REGDOCs that contain further information on specific hazards, for example, fuel-specific hazards, namely the potential for inadvertent fission chain reactions, is covered in REGDOC 2.4.3, Nuclear Criticality Safety.

As far as the level of prescriptiveness is concerned, CNSC staff note that this document is consistent with other regulatory documents in the 2.4 series, or Safety Analyses. Examples of flexibility can be found in

Sections 4.1 and 7 of this document, which allow licensees to apply a graded approach or propose an alternate approach that achieves the same outcome.

For the second concern in relation to the risk-informed graded approach, the text in this document has been revised to ensure consistency with REGDOC 3.5.3, Regulatory Fundamentals. REGDOC 2.4.4 now provides a clear option to licensees to propose specific design measures, analysis, or other measures that are commensurate with the level of risk posed if they provide adequate justification. Text supporting this option is provided in the Preface, Section 1.2, and other sections. Explicit account of risk-informed graded approach is evident in Appendix C, where guidance on postulating initiating events is provided, and its stringency depends on whether the potential exists at a facility or offsite consequences that may lead to offsite emergency mitigation measures.

Regarding comments about the ability to apply the graded approach, the comments received are being addressed in the Regulatory Fundamentals Document, where the CNSC's risk-informed graded approach is described. CNSC staff is currently revising the information in Regulatory Fundamentals to add a new appendix on the use of the graded approach, and it is expected to be provided to the Commission for approval in the coming months.

The concern regarding postulated initiating events, or PIEs, originated from a comparison between this document and REGDOC 2.4.1, Deterministic Safety Assessment, and does not consider a wider context. The technical basis for the selection of external initiating events in both documents is consistent. A difference only exists between the structure of these documents. REGDOC 2.4.4 contains more details on this topic, which are published in several sections in order to adequately describe the three stages of hazard selection.

Ultimately, staff agreed that not all external hazards should be referred to as postulating initiating events; however, the document describes the three stages of selection of credible hazards/events that lead to failures, and only hazards or events deemed credible require safety analysis.

Should the Commission approve REGDOC 2.4.4, the next step would be to publish the Regulatory Document on the CNSC website. The REGDOC would then be added as guidance in the Licensing Conditions Handbook of affected licensees, and the REGDOC would be moved to the compliance and verification criteria section of the Licence Conditions Handbooks once the implementation dates were reached.

I will now pass the presentation back to

Ms. Lynn Forrest, Director of the Regulatory Framework Division.

MS. FORREST: Thank you, Andrew. Lynn Forrest, for the Record.

To conclude, the regulatory document before you, if approved, will improve clarity and strengthen the CNSC's regulatory framework related to safety analysis for Class IB nuclear facilities. The document modernizes the framework, clarifies terminology, incorporates operational experience, and aligns with international safety standards within the Canadian context. This regulatory document was developed in consultation with stakeholders from 2020 to 2021 and is supported by several decades of experience and technical documentation. Therefore, the CNSC staff recommend that the Commission approve REGDOC 2.4.4, Safety Analysis for Class IB Facilities.

Thank you for your time. We're available to answer any questions you might have.

THE PRESIDENT: Thank you, Ms. Forrest and Mr. McAllister, for the presentation.

I do believe we have got some representatives from the nuclear industry available to answer any questions that Commission Members may have. So let me open the floor up to Commission Members for

questions, and we'll start with Dr. Demeter, please.

MEMBER DEMETER: Thank you very much. I have two questions, but I'll just use the one now and if it gets answered later I won't ask the other one. I'll leave room for other people.

I find it a nice, comprehensive, robust review as to the first document. So thank you for that, and the disposition. I wanted to get a sense of more broadly how the CNSC deals with the balance between prescriptive and risk-informed decisions. Different jurisdictions have different balances of that, and somehow you have to make a decision, is this a prescriptive decision or is this a performance-based decision or risk-informed? What process or framework do you use to make that distinction, and how do you validate that you made the right decision?

MR. McALLISTER: Andrew McAllister, for the Record.

Certainly, this document really tries, as you point out, Dr. Demeter, really tries to capture all of that in light of, as we say, sort of the wide range of facilities that are provided. So there is that prescriptiveness, that complexity, because we are talking about safety analysis and we do know that that is not a simple topic. However, it also needs to apply to a wide

range of facilities and, as such, and as you rightly point out, sort of the risk-informed graded approach is really front and centre around sort of the requirements that are laid out, the requirements for which all emanate from, as you mentioned, sort of the international and national standards.

I will ask Dr. Vladimir Khotylev, who is our lead subject matter expert on this, to expand a bit more on those matters that you raised.

DR. KHOTYLEV: Vladimir Khotylev, Reactor Physics and Thermalhydraulics Division.

I would like to confirm what Mr. Andrew McAllister stated.

Development of this regulatory document is based on consistency of application of international provisions of such standards as SSR-4 specific standard for fuel cycle facilities and development of this REGDOC is consistent with Canadian content as documented by CSA standards 292 series and others. So based on consistency with those two categories of documents, the content prescriptiveness or every aspect, not only prescriptiveness but every aspect of the regulatory document was selected, first.

The second aspect which needs to be mentioned is during the development, during about seven

years of development of this document, staff studied in detail current approaches documented by Class IB facilities and that was an additional reason to specify various provisions of this regulatory document to be consistent with best practices which are established by the Canadian licensees.

So, in summary, there are at least three factors which define the prescriptiveness and the flexibility of this specific document. It is International Atomic Energy Agency documents, Canadian standards and best practices applied by Canadian licensees. Thank you.

MEMBER DEMETER: Thank you that.

MR. McALLISTER: Did we capture everything?

MEMBER DEMETER: You did. The only thing it didn't capture was the after-the-fact validation. So how do you iteratively make sure that -- I know this is an organic document and we are much more nimble than our neighbours to the south in being able to change our path as new evidence comes. Is there a process in place to validate the decision made on the spectrum of prescriptive versus risk-informed as you go forward, like a formal process to review?

MR. McALLISTER: I see Dr. Khotylev remains on camera, so I will pass it to him and if we need

further support from the team, we will do so.

DR. KHOTYLEV: Vladimir Khotylev, for the record.

Staff would like to reference the previous development of this regulatory document. During development and implementation of post-Fukushima safety analysis requirements, during that period which involves about seven years, staff studied in detail current practices, current best practices of Canadian Class IB licensees. Each licensee was contacted in terms of a framework of continuous improvement of safety analysis reports and during the implementation of post-Fukushima requirements to safety analysis. So there was a long period, about eight years, when realistic feedback from existing Class IB licensees has been taken into account.

So the iterative process which we are talking about has already happened for a long time and that's why, speaking about the past, we definitely can assure the Commission that the iterative process has been followed already.

Speaking about the future, there are different options to further implement results of an iterative process. One of them is periodic review of every regulatory document, including this regulatory document, and further gathering of feedback from licensees if such

feedback is provided. Thank you very much.

MEMBER DEMETER: Okay, that's good. Thank you very much.

THE PRESIDENT: Thank you.

Mr. Kahgee, please.

MEMBER KAHGEE: Thank you very much for your presentation. I also appreciate the level of detail and how you have set out the disposition of comments.

My questions were more in line with what I asked earlier. Unless there's any additional clarity that can be provided, I will defer to my colleagues. Thank you.

MR. McALLISTER: The only thing I would add, Mr. Kahgee -- Andrew McAllister -- is I think Mr. Levine captured it well in the last one, is the outputs of a safety analysis are of great interest to the public, to Indigenous Nations and communities. We saw evidence of that during the BWXT hearings in Peterborough and Toronto, for example, where a lot of focus was on the hydrogen tank and what might happen to that.

So I do think that it's the outcomes of a safety analysis that really are the focus or of interest to the public and Indigenous Nations and communities, and, as Mr. Levine said, we will continue to have those discussions with them on that and further be able to walk them through. There's nothing to say we can't have a safety analysis

one-on-one session with an interested party, where we just kind of walk them through how these analyses are done and how we look at them and those sorts of things. So certainly opportunities for improvement on that front.

MEMBER KAHGEE: Thank you.

THE PRESIDENT: Thank you.

Dr. Lacroix, please.

MEMBER LACROIX: Short question. Is the DGR considered a Class IB nuclear facility?

MR. McALLISTER: Andrew McAllister, Director of Nuclear Processing Facilities Division.

A DGR would be considered a Class IB facility and as we indicated in the scope of this document, during its lifetime, this document would apply during -- up to the end of its operations. So once all the operations have been ceased and it's into the post-closure phase, then the REGDOC-2.11.1 Volume III around the long-term safety case for disposal facilities would be sort of the main document there. Of course, a safety case would have been developed in support of a DGR as it would move along through its lifecycle, but certainly that regulatory document would be front and centre into the post-closure phase.

MEMBER LACROIX: Good. Thank you.

THE PRESIDENT: Thank you.

Ms. Maharaj, please.

MEMBER MAHARAJ: Thank you, Madam Velshi, and thank you for the presentation.

I had a question with respect to the statement in the report. It's found just at the end of the Background section on page 6, where it speaks to the International Atomic Energy Agency's Integrated Regulatory Review Service mission in 2019, and I was wondering if you could give me just a high-level scope of the work that was done in that mission, because the two statements in the report seem to me to show a bit of a different approach.

So on the one hand, the report was "that the CNSC has a comprehensive and robust regulatory framework", but then the next sentence says that "The mission noted that the CNSC regulatory framework does not entirely specify safety requirements for fuel cycle facilities" and that the REGDOC is going to solve that discrepancy or fill that gap.

Can you help me understand that piece of the report a little better, please?

MR. McALLISTER: Certainly, Ms. Maharaj. Andrew McAllister, for the record.

I will ask Mr. Elder, our VP of our Technical Support Branch and Chief Science Officer, who played an important role in that IRS mission, to provide a

bit of context and then if we need further subject matter experts to supplement, we can do so.

Mr. Elder, over to you.

MR. ELDER: Thank you.

Peter Elder, for the record.

I understand your point and the question is, is there consistency between that?

I think when we looked at it -- what the IRS mission will look at, they will look at actually what is the safety analysis that exists for these facilities and they concluded, well, that was adequate, there was adequate analysis in place. It was a question of was there adequate guidance for someone coming in and looking at it, updating the analysis, and especially if someone was a new applicant who came in, would it be clear enough what the rules were. So it is that the whole framework can be robust because there's enough guidance in there, but there can be specific areas where extra clarity would be required.

They would also note when they look at this one, they looked at our plans. So this document was already on our plans to update. So when we looked at our self-assessment, we said there is an area to add more clarity. So they acknowledged that clarity that we had already ourselves looked at this document and said we were going to produce it. So they would actually be able to see

a draft version of the document. So it wasn't an aspirational goal, it was actually a physical document they could look at in draft form. And that's how they factor those into their recommendations and overall conclusion. Thank you.

MEMBER MAHARAJ: If I could ask a short follow-up question, Mr. Elder.

When the IAEA is doing that kind of an examination, is their conclusion based on kind of an isolated review of our standard or our documentation or are they comparing it to other international leaders in the nuclear safety industry?

MR. ELDER: It is a combination of both. Peter Elder, for the record.

What they would do is they actually -- the standard is the IAEA safety standards and its documentation under that one. When they're looking at -- so that's sort of the minimum bar they look at. And then these missions are made up of actually our peers. So these are regulators from many different countries and they do have the opportunity to note best practices. So these are things that they thought were above normal or interesting ones in this one.

So there's a combination of the base being the safety standards and then they will do that comparison

based on their traditional -- based on the knowledge they bring to the missions about areas where there could be additional clarity or that practices could be improved.

And that's why they have recommendations and suggestions. So it's the difference between -- a recommendation would be we don't think you're meeting the language in the standard, in the IAEA standards; a suggestion is there's a better practice or there's a good practice and you could adapt to that good practice. So it's a combination of the two.

MEMBER MAHARAJ: And is there a feedback mechanism after a mission occurs?

MR. ELDER: Yes, there is. So in terms of the Canadian approach, one, we publish our documents on our website with a management action plan and then there is a follow-up mission that is normally scheduled a few years later. Pre-pandemic this was in the two-to-three-year range. During the pandemic, because of the difficulties, we're looking at slightly longer periods, but we are actually in active discussion with IAEA about when the follow-up to this mission would be.

And to say in the same context we did a mission that was looking at emergency management, what was all the Canadian response, in 2019 as well. We scheduled that follow-up in 2023. And for the IRS ones, we are

actively in discussion with IAEA what makes sense. It's basically what fits in their time schedule at this point, but we will be a follow-up mission in the next year or two.

MEMBER MAHARAJ: Awesome. Thank you very much. That was very informative.

THE PRESIDENT: Thank you.

Mr. McAllister, a question for you.

What is the likely impact on existing Class IB licensees of this proposed REGDOC? Given that the intent is really to codify the requirements, would there be an implementation period required?

MR. McALLISTER: Andrew McAllister, for the record.

The safety analysis reports do get updated on roughly a five-year basis or more frequently if there are major changes. As we noted in our sort of disposition of our comments in our CMD, our licensees have been doing a good job under safety analyses. They are already up to the level of our expectations in the intent of this regulatory document. So we don't think it would be a big step to the implementation and it would just likely align with where they are in their cycle of the updates of their safety analysis reports. That's how we envision it unfolding should the Commission approve this document.

THE PRESIDENT: Excellent. Thank you.

If we do have any industry representatives, it would be good to get your perspective on do you have any residual concerns with this REGDOC, have your concerns been addressed? OPG?

MS. IRVINE: My apologies. I am here. I just had a computer glitch.

No, we have no concerns. Thank you.

THE PRESIDENT: Thank you.

Anybody else? New Brunswick Power, I don't know if you have any Class IB facility licensees online.

MR. REICKER: Nick Reicker, Manager Regulatory Affairs, New Brunswick Power.

We have been involved as part of the industry reviews. Although not directly impacted by a Class IB facility, we have been part of that review and have no concerns with the REGDOC.

THE PRESIDENT: Thank you very much.

Anybody else?

Okay. I don't see any hands up. So again, CNSC staff, thank you very much for both an excellent presentation and the work done in bringing this REGDOC to the Commission for our approval.

This concludes the public meeting of the Commission. With respect to the proposed two REGDOCs, the

Commission will confer on the information it has received and determine whether staff needs to undertake further steps or whether the Commission is ready to proceed with a decision and you will be advised accordingly.

Again, thank you all for your participation. Stay safe, stay well. Bonne fin de journée. Bye-bye everyone.

--- Whereupon the meeting concluded at 10:53 a.m. /

La réunion se termine à 10 h 53