Canadian Nuclear Safety Commission

Commission canadienne de sûreté nucléaire

Public meeting

Réunion publique

March 25th, 2015

Le 25 mars 2015

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

Salle des audiences publiques
14e étage
280, rue Slater
Ottawa (Ontario)

Commission Members present

Dr. Michael Binder
Mr. Dan Tolgyesi
Dr. Sandy McEwan
Ms Rumina Velshi
Mr. André Harvey

Commissaires présents

M. Michael Binder
M. Dan Tolgyesi
Dr Sandy McEwan
Mme Rumina Velshi
M. André Harvey

Secretary:

Mr. Marc Leblanc

Secrétaire:

M. Marc Leblanc

General Counsel:

Ms Lisa Thiele

Avocate générale :

Me Lisa Thiele

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Ottawa, Ontario

--- Upon commencing on Wednesday, March 25, 2015
at 2:03 p.m. / La réunion débute le mercredi
25 mars 2015 à 14 h 03

Opening Remarks

M. LEBLANC : Bon après-midi, Mesdames et Messieurs. Bienvenue à cette réunion publique de la Commission canadienne de sûreté nucléaire.

We have simultaneous translation. Please keep the pace of your speech relatively slow so that the translators have a chance to keep up.

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

We would ask that you please identify yourself before speaking so that the transcripts are as complete and clear as possible.

La transcription sera disponible sur le site Web de la Commission dès la semaine prochaine.

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

after the closure of the proceedings.

Please silence your cell phones and other electronic devices.

Monsieur Binder, président et premier dirigeant de la CCSN, va présider la réunion publique d'aujourd'hui.

President Binder.

LE PRÉSIDENT : Merci, Marc.

Good afternoon and welcome to the meeting of the Canadian Nuclear Safety Commission.

Mon nom est Michael Binder. Je suis le président de la Commission canadienne de sûreté nucléaire, et je vous souhaite la bienvenue.

Welcome to all of you who are joining us via webcast.

I would like to start by introducing the Members of the Commission that are with us here today.

On my right is Monsieur Dan Tolgyesi.

On my left are Dr. Sandy McEwan, Ms Rumina Velshi and Monsieur André Harvey.

We already heard from our Secretary Marc Leblanc.

We also have Ms Lisa Thiele, Senior General Counsel to the Commission.

MR. LEBLANC: The *Nuclear Safety and*

Control Act authorizes the Commission to hold meetings for the conduct of its business.

Please refer to the updated agenda published on March 19, 2015 for the complete list of items to be presented today.

In addition to the written documents reviewed by the Commission for this meeting, CNSC staff and members of the industry will have an opportunity to make presentations and Commission Members will be afforded an opportunity to ask questions on the items before us.

We have a new process where we're trying to close items that are on the action list coming up from previous proceedings so it is clear that items have been closed and I would like to take this opportunity to close four items that were opened in the context of earlier Commission proceedings.

The first one is an action that was requested back in August 2014 following a presentation by staff entitled "Cradle to Grave: Fuel Management in Canada." The request was that the presentation be slightly amended and published on our website and that was done recently.

The second item was with respect to Historic Contaminated Land Exemptions. This was an item that was discussed in the May 2014 Commission meeting. The

file is closed as the CNSC staff sent the formal notification required by the Members to property owners that sites are no longer under CNSC regulatory control as they have been determined to be safe. A memo dated March 3, 2015 was sent to the Commission Members in that regard.

The third item was with respect to an update on the incident involving four UF6 cylinders at the Port of Halifax that was last discussed at the August 2014 Commission meeting. The file is closed as the root cause confirmed the incident was due to a faulty crane, as had been indicated during the Commission proceeding.

The fourth item is with respect to the Chernobyl health data. That information was published in the form of a fact sheet that was prepared by CNSC staff and it was published on our CNSC website in February 2015. This was a follow-up item arising from the June 2014 presentation by CNSC staff on the Study of Consequences of a Hypothetical Severe Nuclear Accident item which will be further discussed also tomorrow as part of these Commission proceedings.

Mr. President.

CMD 15-M7.A

Adoption of Agenda

THE PRESIDENT: Thank you, Marc.

With this information, I would like to call for the adoption of the agenda by the Commission Members, as outlined in CMD 15-M7.A.

Do we have concurrence?

For the record, the agenda is adopted.

CMD 15-M8

Approval of Minutes of Commission Meeting held February 4, 2015

THE PRESIDENT: I would like to call now for the approval of the Minutes of the Commission Meeting held on February the 4th, 2015. The Minutes are outlined in Commission Member Document CMD 15-M8.

Any comments, additions, deletions?

Okay. So we have concurrence?

So for the record, the Minutes are approved.

CMD 15-M9

Status Report on Power Reactors

THE PRESIDENT: The first item on the agenda for today is the Status Report on Power Reactors, which is under CMD 15-M9.

I understand that Mr. Jason Nouwens from NB Power and Mr. Robin Maley from OPG are here with us today.

And I see somebody from Bruce Power who is not on my record here. I don't know if it's by design.

So, I understand that, Mr. Howden, you will start with a presentation. Please proceed.

MR. HOWDEN: Thank you.

Good afternoon, Mr. President and Members of the Commission.

For the record, my name is Barclay Howden.

I would like to update the Commission on developments pertaining to CMD 15-M9 that have occurred since this CMD was submitted on March 23, 2015.

There is an update to Section 1.6, which is Point Lepreau.

On March 24, 2015, the fuelling machine was repaired and it is now undergoing further maintenance prior to the unit returning to service.

Please note that CMD 15-M9 also contains a new section called 1.7, titled "All Power Reactors," and that section is used to address the suspect material to manufacture valves.

So an update is between February 26 and March 13, 2015 Nuclear Power Plant licensees received letters from their supplier indicating that material properties of certain supplied valves may not meet required specifications. Since then, these valves are considered 'suspect' items and, as a result, reportable under REGDOC 3.1.1, which is Reporting Requirements for Nuclear Power Plants. This was formerly called S-99.

CNSC staff is providing this preliminary information to the Commission of this development and will update the Commission as further information is provided by the licensees. We are expecting detailed reports within 60 days as per REGDOC 3.1.1.

CNSC staff stresses that, as of today, all licensees' engineering assessments have shown no immediate safety concerns. The licensees are all present and can provide more details on what they have done so far and what further steps will be taken.

This concludes the Status Report on Power Reactors. CNSC staff are now available to answer any questions the Commission Members may have.

THE PRESIDENT: Thank you.

I should have checked to see that -- we have two people online, Mr. Mullin from New Brunswick and Mr. Gilbert from OPG. Can you hear us?

MR. GILBERT: Ken Gilbert for the record. I can hear you.

MR. MULLIN: Derek Mullin for the record. I can also hear you.

THE PRESIDENT: Okay.

And Mr. Granville?

MR. GRANVILLE: Yes. Sean Granville for the record and I can hear you clearly.

THE PRESIDENT: Okay, great! Thanks.

So let's jump right into questions and let me start with Ms Velshi.

MEMBER VELSHI: Thank you, Mr. President.

I'll start off with the valve issue and maybe I'll start off with staff and then we can turn it over to the licensees.

So these valves were received as of 2001 and -- correct me -- with the update you've just given, the issue was identified when the supplier notified the operators that these were faulty valves?

MR. HOWDEN: Barclay Howden speaking. That is correct.

MEMBER VELSHI: So if you can give some indication of, you know, how many valves we're talking about that may have been stored and how do we have reassurance that we don't have a safety issue at the moment?

MR. HOWDEN: So I can give you some high-level numbers in terms of numbers of valves and the licensees can provide more precision.

These numbers include valves that are also in storage that have not been installed but have been quarantined. So right now, at Pickering, the number is around 390 valves; Darlington, 67; Bruce, 279; Point Lepreau, 12; and 3 at Gentilly-2. So those are the numbers.

THE PRESIDENT: Are these total, including the inventory or those are --

MR. HOWDEN: It includes the inventory. The licensees can provide the details on which ones are installed and which ones are in inventory.

So our expectation when something like this occurs is that they immediately look at the nuclear safety right away and so they have processes to satisfy that these are in place. These are called like Technical Operability Evaluations or some of them do things they call Engineering Assessments.

So they've done that on all the installed valves and come to the conclusion that these valves as installed are safe for continued operation.

As I said, further detail will come but we do know that they have done a review of their OPEX and maintenance histories and, to our knowledge today -- I stand to be corrected, they may have more information -- is that the history has shown no deficiencies or corrective work orders with any of these valves at this point in time.

So from our perspective, the regulatory oversight is that we require licensees to have approved management systems in place, which includes procurement processes and the oversight that they do with those, which would include their interactions and oversight of vendors and quality of products that they receive. We review these on a regular basis as part of our Compliance Program.

We have recently introduced through 3.1.1, under the reporting requirements, a reporting for counterfeit, fraudulent, suspect items, which is called CFSI. I think you're familiar with that and with the rollout of REGDOC 3.1.1. So this situation is the first time that we've received this under the new reporting of 3.1.1.

Prior to that, any reporting like that was done through just their generic reporting and our

understanding is that we may have had some limited cases in the past but not something as widespread as this.

From our perspective, we do do reviews of their programs and inspections, and we have recently looked at some of the supply management processes lately. In terms of the details, I would ask the licensees to provide that because part of what we want to learn is what perhaps didn't work and what kind of lessons learned come from that.

The things that did work is that the OPEX system did pick this up. There was sharing within the industry because not everyone got their letters at the same time but the industry fanned it out so that their industry members were all aware of the issue, which I think was a very good movement. They recognized that it could be widespread and they moved very quickly to do their evaluations but I would like to propose that maybe they provide you with some more details.

MEMBER VELSHI: Yes, I would certainly like to hear from the licensees, but before we move to them, is this just a Canadian problem or is this a wider one than that?

MR. HOWDEN: To our knowledge, it's a wider one. This is an international supplier. Yes.

MEMBER VELSHI: Thank you.

So, licensees?

MR. SAUNDERS: Yes. So perhaps I'll start. Frank Saunders for the record.

Just a little background first, I think, to kind of put it in perspective for you.

So this is really an extent of condition coming out of the Korean issue that occurred a couple of years ago. So Korea Hydro & Nuclear Power has been looking through a variety of suppliers and testing their supply system as a result of that.

They found a manufacturer in the U.K. and this particular company, their job was to test the product coming out of the steel mills -- so this is the base product that goes into making the valves -- and provide the certificates to prove that the material they're receiving meets the ASME requirements.

And they found in their audit that they were in fact in some cases falsifying these records. They were changing them not in any majority way but making small changes to allow them to pass the test and go forward. Luckily, both the original specs and the altered ones were available. So we have the original mill certificates to work from and so that allows us to do the safety analysis.

So that material got used in valves made by Thompson Valves. And Thompson was part of the Newman

Hattersley group at the time, so these are large suppliers of Class 1 -- these are all Class 1 components we're talking about here with, you know, significant sort of ASME constraints.

So they notified us fairly quickly and started notifying the industry. We went down to see them the next day. We had a look at the original specs and the analysis they did around those specs and did our own analysis and we were satisfied the safety case is met.

We still need to provide a submission to the TSSA to demonstrate that the valves installed actually still meet the requirements despite the misspecification. So the strength here I think is that the original certificates are available. So we do know what's actually in the valves. The other issue is these are all small valves, sort of 2 inches and less, so relatively small.

So the safety case is now we've had a review on it. We are doing our own extent of condition. So most of the valves were bought through Newman Hattersley but it affected Thompson's valves, so we're going back to check all our work orders with Thompson Valves to see if there's any of those that might be an issue.

And we also have some work orders with the other company, the Hi-Tech, so we're going back to look at those as well. We don't know that there's any problem with

them but we're going to verify whether any of that material is suspect or of concern as well.

So that's the stage we're at. We're satisfied we've verified where all the valves are now. We know where they are in the station, we know where they are in storage. The ones in storage are quarantined. The safety case has been made for the ones in the plant and we will follow that up with the proper pressure boundary documentation through TSSA.

So that's the basic background. So it's really kind of an example of the system working the way it's supposed to work. If you discover a problem, the notifications go out and people react to it and quite quickly. So we got -- like we met with them the day after we got notified. So they were very fast to provide the detail to us that we needed.

MEMBER VELSHI: A couple of questions more of clarification.

So the issue was with the steel supplier as opposed to the valve manufacturer. And so, has that steel been used for other components? Like have you had the same supplier that other manufacturers may have used?

MR. SAUNDERS: Yeah. The reason that we're going back to look at the POs on that particular supplier is to see if it's been used for other things,

right? And we have a number of POs and I expect all companies will have that bought material directly from that initial supplier. So we now have to chase those and see whether there was any issue there.

We may have bought material for completely non-quality issues. So, you know, it takes a little while to search through now and see if there's anything broader than these valve issues and we won't know until we look.

But, by and large, all the materials that are used in sort of significant QA requirements are already identified but we're just looking beyond that to say, well, did we buy anything else from this company, is there any reason to suspect it was a problem or not. And so, we will look at all of that.

MEMBER VELSHI: And who is the steel supplier or where from?

MR. SAUNDERS: It's from the U.K. and it's called Hi-Tech Specialty Metals. I think I'm safe to say that and I won't get sued but that's the information that I have, is that it's from them.

And we understand that there are several forms of legal actions being taken here. It's obviously not in our jurisdiction but it is being dealt with in the U.K. And of course they've been removed from all the supplier lists so that we won't be getting more material

from there.

MEMBER VELSHI: And we heard this was a global issue. So how are you sharing learnings brought forward with others?

MR. SAUNDERS: Yeah, it is a global issue. Frank Saunders again for the record. We have shared it through the OPEX, through WANO and INPO, and there's lots of evidence that other companies are getting it because they're getting the OPEX before they get the letter. So it takes a while for the company to go through all its -- you know, all the people they've supplied and get the letters out to them. So a number of companies are actually calling them up before they actually get their letter, saying what's it look like and getting the data firsthand.

So the OPEX is working and I think the extent of condition, you know, is pretty -- it's evident that the extent of condition from the Korean issue is having its effect and people are starting to understand, you know, how to look at the supply chain and where some of the weaknesses might be.

So this is really all about, again, industry looking to see how we can make sure we try and prevent some of these issues in a supply chain that's very large, right? So we'll have a relook at our methods and look at whether there's more we can do to actually find

these things quicker.

MEMBER VELSHI: And just to confirm, you said with the assessment you've done so far you don't believe there will be a need to replace any of these valves that have been installed. And those that are still in your inventory, would you discard them or still continue using them?

MR. SAUNDERS: We need to look at each one and we haven't worried too much about the inventory ones yet, we've just quarantined them. So we'll go look at them. In many cases they were simple things. Like, you know, your metal stress value might be 59 when it should have been 60, so it got altered to 61, right? And when you look at that from a safety point of view, it's not significant and so you could approve that use, depending, you know, on what the use is of course.

So in most cases, we don't believe we'll have to replace these valves, but certainly, the ones we looked at, we don't think we need to replace. The TSSA will have their view on that when we submit them the material but in our engineering review there's none of them that will require replacement. Most of it has been in use now for 10 years. So if there was an issue, we would have been aware of it anyway.

So our assessment says no significant

issue and we will turn our attention next to the ones in storage and start looking at whether we should. It's not quite as simple as it sounds because many of these things are two- or three-year lead time items. The Class 1 components are very slow to get.

THE PRESIDENT: But I guess my question is more of a generic one. You know, this started, if I understand the note here, in 2001. So we are talking about 14 years it’s going undetected. So how do we know what we don't know? You know, it's one of those known/unknowns. And you saw what happened in Korea also, they discovered after it was running for a long time.

So you are relying on somebody else's quality assessment, right, quality assurance, or I thought you were doing your own and you would do a big sample. If there is a significant number involved you would do your own kind of quality assurance on such orders.

MR. SAUNDERS: Yes. We certainly have our own audit programs. But if you look at all of the sub-suppliers to all the material there is an awful lot of them and so trying to touch every one of them is a problem. So we tend to focus on the quality programs and make sure they are good. If, however, you have someone who is deliberately fabricating material and, you know, it doesn't matter how good your quality program is if people are

actually going to fabricate it.

So one of the questions coming out of Korea was how could we do a better job in this regard and cover more base as an industry, right? As an individual company it's going to be very difficult to do that. But as an industry, can we find a better way of kind of getting back to some of the initial specs and at least doing some spot checks so that we can satisfy that?

So we are working on that issue and we are trying to come up with a methodology to try to find the right answer, the right balance. I can't say we have the entire answer now. By and large, if you look at the system the way it's operated over the last 34 years it has been very successful.

But, like you say, an individual who is willing to forge or change things, you know, the system relies on the integrity of the people in it. And you pay a steep price if you are found not to be, you know, up to that level because you are off the supplier list and you don't get to do business anymore and you may even go to prison for falsifying records. So you pay a steep price and that's part of what we count on for people to be ethical in their approach.

But, I think, based on the Korean event we had already kind of considered that we needed to look a

little further and this is just a little more evidence that there is a need for something slightly different here to allow us to get at some of these things. We don't have exactly the plan yet.

THE PRESIDENT: Well, I thought the battle cry of the industry is trust, but verify, right. So particularly when you purchase things of not a one-off, but a significant number. So I thought the industry should find a way of doing some verification on large procurements.

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

So in some ways it actually kind of works the other way around. The once-off stuff we look at a lot closer because we don't have a track record on it and we don't necessarily know the status. So if you are building a large calandria or a component like that we would actually be in the factory a fair amount checking out what's going because we don't have a track record.

On things like 2-inch valves that we buy all the time we have a very good track record. We do test them in situ, right, so when a valve comes in its pressure tested and all those sorts of things so, you know, when we put it in a system it's not that it's untested, but in this case the material spec is not quite what it was claimed to

be. So there is a level of check that always exists there. To some degree we rely on the QA programs and those tests that we do when we put it in and the size and risk of the component to make a judgment about how far back in the supply chain we go.

So it's really kind of backwards to what you described. The big and unusual stuff we check quite closely, the stuff that we buy more frequently we rely on the supply chain to do and on the track record that exists and along with our own in situ testing when we put the thing in place.

THE PRESIDENT: Monsieur Harvey...?

MEMBER HARVEY: What could be the impact supposing that one of those valves would break, would leak? What would be the impact? Would there be any risks for the workers and the public?

MR. SAUNDERS: Yes. You have to look at each individual system, but by and large what we would have here is a leak, right, and leaks do occur. Now, it's not something desirable by any stretch of the imagination but not catastrophic either, and especially on smaller valves. So the risk is mostly it would force us to shut down and fix an issue that we weren't prepared to shut down and fix and so it would cost money for the most part.

MEMBER HARVEY: What guarantee do we have

that -- there are so many parts, so many pieces of equipment in a nuclear reactor that the same problem could be latent, that could be there but we don't know.

Are you going to increase the -- the first question is, are you going to increase your awareness of the -- to avoid some problems like this on other pieces of equipment?

MR. SAUNDERS: Yes. I mean that's the part we are looking at, is can we do more from a supply-chain point of view to predetermine these things?

Like I say, there are many layers to the QA and to the safety so we never just rely on one thing. We always test and inspect once we have the product as well. Especially things that are used for pressure boundary, there is a whole protocol about testing them before we put them in and so forth, right. So we never rely on one barrier for safety. So we feel pretty confident in general that the materials meet the basic requirements.

However, you know, it doesn't really -- you really need to meet the ASME Code to be sure and you don't want to be dispositioning things that are slightly off. You really want to buy it as the spec has stated. So we want to go back and look at how we best approach that from an industry point of view. I can't say that we

actually have the right answer now.

My speculation would be that we would, at least on a risk-based approach, start doing some, you know, plant inspection at some of the source materials and just asking to see the actual certificate so we can satisfy ourselves that they look legit and it's there. But there is a fair amount of discussion to go there so I don't want to promise something for the industry that we haven't actually quite agreed on yet. But that's where we are looking.

MEMBER HARVEY: Is it the first time that such problems occurred? I mean are you aware of the same type of problems in the past, in the past -- past failures?

MR. HOWDEN: Barclay Howden.

I don't have all the details at my fingertips, but I am aware that the procurement programs of some of the licensees have caught some of these things before they have actually got it into the plant, which is, you know, the best scenario if you are getting that type of material. So we do know it has occurred. I don't have the details.

I would just like to comment a little bit on the impacts, Monsieur Harvey.

As Bruce Power said, you know, it depends on the usage and we are reliant on, when the plants are put

together, strong principles of design and the defence-in-depth principle, so that a single failure doesn't propagate into a major failure. So, you know, we are looking at multiple redundant diverse systems to be put in place. Although upfront these Class 1 valves and Class 2 valves, they all are supposed to have traceability so that you can actually go back. And in this case, because something has come back they have actually been able to trace back.

I think the response from the industry with our oversight will be are there lessons learned here that they need to do something different within the procurement to try to have these off before they get into the plant. So I think there are lessons learned and we will be monitoring that and reporting back to you folks.

MEMBER HARVEY: Over the total how many of those valves are installed and how many are in store?

MR. SAUNDERS: You are talking industry-wise or --

MEMBER HARVEY: Well, yes, just an idea.

MR. SAUNDERS: In our case, I mean at our basic look at the Newman Hattersley there are about 200-227 but, as I say, we want to look broader to both Thompson Valves and to the Hi-Tec valves, so I can't tell you for sure that that is the final number. That is the number

that we have looked at, at this point in time, and reviewed. The other lists may have nothing in them or we may find more valves. We are just not sure yet.

THE PRESIDENT: Thank you.

Go ahead.

MR. MANLEY: Robin Manley, for the record.

I was just going to respond to the question about the number of valves. Like with Bruce Power we are continuing to evaluate the full extent of condition and, as has already been stated, the valves that are not yet installed but are in our warehouse are all quarantined. It is on the order of several hundred valves for each of Pickering and Darlington.

THE PRESIDENT: Okay. Thank you.

Mr. Tolgyesi...?

MEMBER TOLGYESI: If I understand well you have several suppliers. But is it the same steelmaker we supply for these suppliers and manufacturers, this deal?

MR. SAUNDERS: In this case it was a supplier for Thompson Valves in the U.S. They weren't so much a supplier as a tester, right, so they get the steel product from the steel mill. They test it to prove it meets a spec and then they give the certification to Thompson Valves to say that you can go ahead and use this material to make your valve. So they are an intermediate.

They specialize in testing.

So in this case, this is between Thompson valves and Newman Hattersley. This is the extent on that.

We do buy some other materials from places like Hi-Tech, but not necessarily as valves, right, and different forms. And so we want to go and just make sure that all the material we bought was either -- was in the right specification. So we are looking at that as well.

So in this case it's the one -- it really wasn't the vendor for the metal. It was the testing company in the middle because if the metal doesn't meet it, then it just goes on for a different purpose. It just can't be used for that purpose.

MEMBER TOLGYESI: You were saying in response to a question of safety that because it's a small valve, a 2-inch valve, it's not really a risk because the main cause what will happen is its leaking and you have lots of leaks. So if you have lots of leaks; one more or one less, how you could relate that to the quality of steel because, you know, there are different reasons for leaking?

MR. SAUNDERS: Frank Saunders, for the record.

I hope I didn't say I have lots of leaks because that's not true. We do have valves that leak.

I mean the extent from a safety point of

view is a 2-inch valve can only create a 2-inch hole, right, so there is a limit to how much it can leak and so in the worst case in safety analysis that your biggest leak you can get, whereas if you have a 24-inch valve you can get quite a different answer.

The other side, of course, is what we do is look at the material properties in terms of the valves strength and for a minor variation the material properties that actually -- you know, it doesn't really affect the valve strength significantly.

You do look at each application and just make sure that there is nothing special about the application that would be a problem. So the engineering analysis is how you are sure the valve is fit for purpose, which is exactly what you do with ASME. ASME, when they created the specs, did the engineering analysis and all we do is look at the analysis and revise it and see if the answers are acceptable and in this case the answers are acceptable and we believe that the TSSA will agree, but we will make that case to them and then they will see.

MEMBER TOLGYESI: My question will be regarding this Pickering extreme cold weather. It's funny because it's extreme cold weather. Sometimes it's colder and when I was looking at this -- I will start in the way I prepared my questions.

You were talking about these standby generators. Standby generators are emergency generators; no, or they are different?

MR. MANLEY: Robin Manley, for the record.

I am prepared to speak to this, however we do have Ken Gilbert on the line who is our Director of Ops and Maintenance and he may wish to respond directly.

MR. GILBERT: Thank you, Robin. Ken Gilbert, for the record.

Yes, they are standby generators which would be used for emergency power if offsite power was lost.

MEMBER TOLGYESI: Okay. So if offsite power is off the standby generator automatically should start up?

MR. GILBERT: That is correct. Ken Gilbert, for the record.

Loss of offsite power, they do automatically start.

MEMBER TOLGYESI: Now, you were saying that the indication was irrational due to low exhaust temperature. Exhaust temperature of what?

MR. GILBERT: Ken Gilbert, for the record.

So we measure exhaust temperature for when the unit is running. We would be able to tell you a couple

of things about it. You know fairly low exhaust temperature is used as a parameter to say that the machine has not lit and is not burning, so it would be an indication that the unit has failed to start. The temperatures were so low that this indication was off scale low and that is why it went irrational. It was beyond the scope or the scale of the instrumentation as designed.

MEMBER TOLGYESI: So when you are talking about exhaust temperature, it is the exhaust temperature of the generators?

MR. GILBERT: It is the exhaust temperature of the motor or the engine that runs to drive the generator. If I could add to that, in this case we did test all the standby generators that indicated the “not ready to start” light on that shift with that alarm in and they did all successfully run.

MEMBER TOLGYESI: Where are these transmitters located in relation to emergency coolant injection tank?

MR. GILBERT: So Ken Gilbert, for the record.

They are on a north-south axis. They are sort of -- they are in alignment but they are remote from each other. The standby generators on Pickering 1 to 4 side would be several hundred metres away and on Pickering

5 to 8 maybe 50 metres away from the tank.

MR. MANLEY: Excuse me. It's Robin Manley, for the record.

Was the question relating to the high-pressure emergency coolant injection?

MEMBER TOLGYESI: But you are saying that two out of four levels transmitters and emergency coolant injection gave off scale indication. That means these transmitters did not detect the right level of a coolant and that is what caused the problem.

MR. GILBERT: So it’s Ken Gilbert, for the record, if I may.

So in this particular case those transmitters are used to indicate tank level and they are used for logic which would indicate that the tank, if you were injecting coolant, had drained down and you were at a low tank level and your inventory of injectable fluid was exhausted. At that point the logic would switch from high-pressure injection to a casualty unit to recovery injection where we recirc water from inside the unit back to the heat transport. So this logic would take place 20 minutes into an event at the earliest and, you know, up to several hours then, depending on the size of the leak.

So in this case we had two of four indicators that were reading high-pressure. We did have a

manual staff available to note that the level had fallen. They had other indication which is levels rising within the building into which you were injecting fluid and they were in a position to manually transition from high-pressure injection to recovery injection and in that way the emergency coolant injection recovery system was impaired but was not unavailable.

MEMBER TOLGYESI: Because what you are saying is that it took less than four hours to thaw these transmitters. That means somewhere it was quite frozen and so what is your safety system to make sure that -- because two of four is quite a bit, okay.

MR. GILBERT: Ken Gilbert, for the record.

I concur that what we have to prevent those instruments from freezing this insulation on the lines and heat tracing on the lines. We recognize that they should not have frozen. The design is such that they should not have frozen. We understand that either the insulation or that heat tracing is degraded in some fashion and we will make additional repairs.

I would just like to stress that the issue with the two out of four level transmitters on emergency coolant injection and the four out of six standby generators not ready to start, they are independent things that happened on the same day for the same common cause,

which was very low temperature but, you know, they were treated as independent events because they posed different risks to the power plant.

THE PRESIDENT: I have to tell you, and again it is language with me here, "extreme cold weather". Post-Fukushima we have been talking about doomsday scenario. This is Canada. What do you mean "cold weather"?

To what temperature did you test this particular system? I hope you went down all the way to -40. And the idea that we qualify our system for cold wind, whatever, how does that happen?

MR. GILBERT: Ken Gilbert, for the record.

So the design temperature is -35, so we should not have had freezing in the legs at -27 degrees. We do recognize that we have some degradation of either the insulation or the heat trace which I spoke to. We are responding to that. We have taken other provisions for the period of this winter until we can get complete repairs done to ensure that we don't have a repeat event of this if temperatures were to drop to similar temperatures again this winter.

THE PRESIDENT: Staff, do you agree that -35 is sufficient? I have known -- right here in Ottawa I think it was colder than -35.

MR. HOWDEN: Barclay Howden. I can't comment on what the original design specs were.

THE PRESIDENT: No, but I mean I thought that we, CNSC, would have some say in the design, in the acceptability of the design for a doomsday scenario, which I keep yammering about.

MR. HOWDEN: I think we would have. I think in this case it's more the case of -- I don't think necessarily the design criteria. It sounds like it's actually more of a degradation of the mitigation measures that were put in place. So the insulation and the heat tracing weren't working at a temperature that was actually above that.

So it may mean we have to revisit this from that standpoint. They would have down in the Pickering area records of weather over the past X number of years, because we do know that OPG used that information for the Darlington new build.

THE PRESIDENT: No, but what really concerns me is after all the talk that we have gone through in the last three years about beyond design and external things, climate change, weather and all that stuff, to come across with a statement that says "cold extreme weather is making our mitigation emergency plan unavailable" is really unacceptable.

MR. GILBERT: So it's Ken Gilbert, for the record.

I would like to stress that this equipment was not unavailable. Its availability was reduced. It was impaired but it was available and would have been able to function to mitigate an accident if an accident had taken place in the period of time when we saw the transmitters frozen because we had manual override of it and we had staff with independent monitoring capability.

As well, for the standby generators we did have an alarm in which sent staff out to investigate, you know, to search for potential problems, but those machines were available and were tested and did start. Now, it is important to note that we want to draw lines in the sand for operating staff that has them respond before things do become unavailable and we declare actions and levels of impairment and we respond promptly based on what's inside the operating procedures and there is a substantial distance between the limits of operation and the limits of safety.

THE PRESIDENT: So are you going to report? Are you going to do a root cause and a proposed fix to this particular problem? And by when would such a report be available?

MR. GILBERT: We're doing an

evaluation in -- you know, the language that we use is it is a Charlie 2 investigation, which is a high level documented investigation to what the gaps were that caused both these responses this winter. And that's in our corrective action program.

We will take steps to improve the insulation and the heat trace. And you know, part of our winterization program is to actively make repairs across the plant to potential degradations of insulation and heat trace as well as situations that help us manage lake ice or, you know, extreme snow conditions.

So the answer is yes, we do have it captured in our corrective action program. We will make repairs.

THE PRESIDENT: Thank you.

Dr. McEwan?

MEMBER McEWAN: Thank you, Mr. President.

I think that my questions have been answered with this last conversation, but if I could make a plea. The two bullets that describe these two events, certainly to a non-engineer, are incomprehensible.

They're too brief. There's certainly

no real sense of flow of what happened as was described over the last 10-minute conversation.

It would be really helpful to have, in this document, a much fuller description, a much fuller detail not only of what happened, but also what the implications were and what the following events were.

This was not helpful as it was written.

MR. HOWDEN: Thank you for your feedback.

THE PRESIDENT: Ms Velshi.

MEMBER VELSHI: So my question's on Point Lepreau and the fueling machine problem.

Again following up on Dr. McEwan's comment, the description is so cryptic, it doesn't tell us what the problem is other than there's a problem with the fueling machine, so can you elaborate on what the issue is?

Are there implications for other stations? Is this a refurbishment issue? Like what does this all mean?

And I know it's got a fair bit of media attention, and perhaps that's why it's here. I don't know.

MR. HOWDEN: That is the main reason it's here. It's operational. However, Point Lepreau is here to provide a bit more information because I think you might actually find it quite informative.

MR. NOUWENS: Jason Nouwens, for the record.

During normal fueling operations, the downstream fueling machine which is receiving the irradiated fuel into the fuel machine experienced an inoperability of the ram which positions the fuel. Where that put us was, when we fueled the eight new fuel bundles into the reactor, we were unable to reposition those and backed the fuel machines away from the core and put the shield plug and closure plugs back in place.

What we did at that time following our operational decision-making process, we evaluated our current plant state, determined that we were in a safe state, evaluated the best path forward. And that evaluation process led us to the decision to shut down.

Following shutdown at a lower pressure, we were able to return the ram to an operable state, position the fuel the way it was before we fueled, reinstalled the closure plugs and

backed the fuel machine away.

MEMBER VELSHI: But the kind of problem you had is not something unexpected. I mean, this happens.

MR. NOUWENS: That's correct. This is -- it is a known problem. It's a maintenance issue with the B-ram, which we do do preventive maintenance to try to prevent. It is not an unexpected issue.

MEMBER VELSHI: Thank you.

THE PRESIDENT: Can I piggyback on this?

I recall practically every site had problem -- every nuclear power plant had problem at one time or other through the fueling machine.

Is that a common kind of an industry we can -- that one can learn from another? That's my first question.

The second, could that have been anticipated and fixed during the lengthy refurbishment process you guys have gone under?

MR. NOUWENS: Jason Nouwens, for the record.

This is -- it is a known industry issue with these rams. There is a proposed design modification that would possibly prevent this in the

future. However, the position of the industry has been to do preventive maintenance at a certain number of cycles, and it would not have been possible to address interim refurbishment as doing the number of fueling machine cycles during normal operation to preventive maintenance is required on an ongoing basis.

THE PRESIDENT: So you couldn't have anticipated during the -- you know, during the refurbishment try to, I don't know, design changes, et cetera, based on some other experience from other nuclear power plants.

MR. NOUWENS: Jason Nouwens, for the record.

There is currently plans in place to look at a future modification, but that was not part of the original refurbishment assessment. At that time, we were using a preventive maintenance strategy to address the issue.

THE PRESIDENT: Okay. Thank you.

Anybody else? No?

Okay. Thank you. Thank you very much.

The next item on the agenda is the event initial report concerning an unplanned release

of uranium dust in the work environment at Cameco Corporation Key Lake mill as outlined in CMD 15-M16.

And we have representatives from Cameco Corporation in attendance here, but first we're going to hear from CNSC staff. I understand that Dr. Newland will make a presentation here?

I'll give you some time to set up.

I understand that there's some people from Saskatoon joining us via video conference? Can we test the system?

MR. LANGDON: Mark Langdon, for the record.

I can hear you.

THE PRESIDENT: Great.

MR. GATES: And Tom Gates, for the record.

THE PRESIDENT: Thank you.

Go ahead.

MR. NEWLAND: Good afternoon, Mr. President, members of the Commission. My name is Dave Newland, and I am the Acting Director-General of the Directorate of Nuclear Cycle and Facilities Regulation.

I have with me today Mr. Jean LeClair, who is the Director of the Uranium Mine and Mills

Division, the division that leads regulatory oversight of all the operating mines and mills in Canada.

We are here today to present an Event Initial Report for an event that occurred at the Key Lake mill on February the 16th, 2015. The EIR is described in CMD 15-M16.

I think it best that Cameco presents first to describe the event and the actions that it has taken and then we follow up with a summary of the actions that CNSC staff have taken to date and those planned for the future.

Thank you.

THE PRESIDENT: Okay. Go ahead.

MR. MOONEY: Good afternoon, President Binder and members of the Commission. For the record, I am Liam Mooney, Cameco's Vice-President of Safety, Health, Environment, Quality and Regulatory Relations.

With me today is Dr. Brett Moldovan, the Acting General Manager of Cameco's Key Lake operation.

I should note that Dr. Moldovan, while new to the role of General Manager at Key Lake, was mill manager for the previous three and a half years and has worked for more than 20 years at Cameco.

Also with us today is Kevin Himbeault,

Manager of SHEQ, Regulatory Affairs and Risk Management at Key Lake, and Kevin Nagy, Director of SHEQ, Compliance and Licensing for Cameco.

We are here today to discuss an event that occurred at the Key Lake mill involving the release of a small amount of calcine uranium into an area of the yellow cake building.

At the outset, I will speak briefly about our health and safety programs as well as our performance in this regard, and then turn it over to Dr. Moldovan to discuss the event in more detail.

In addition to providing you with further details of the event, we will also outline steps that we have taken to ensure worker health and safety is protected and to prevent a recurrence in the future.

At Cameco, the health and safety of our workers and the public as well as protection of the environment are our highest priorities. Consistent with this, safety and protection of the environment is integral to everything we do at the Key Lake operation.

The result of this focus is reflected by our performance. For example, in 2014, Key Lake reached the significant milestone of three million

hours worked without a lost time injury.

Key Lake also has a mature radiation protection program that is designed to keep radiation doses as low as reasonably achievable, or ALARA, relying on a defence in-depth approach. Consequently, we have enjoyed strong performance in this regard as well.

Prior to the January event, for example, the Key Lake operation achieved 630 consecutive days without exceeding a radiation action level.

In accordance with our training program, Cameco trains nuclear energy workers to identify potential issues and take appropriate action. As we believe this event demonstrates, training has proven effective because a concern was recognized immediately and reported.

This demonstration of a reporting culture is also an important indicator of the strong safety culture at Key Lake.

The combination of our strong safety culture and our various programs are also components of the broader defence in-depth approach to safety employed at all Cameco operations.

With that, I will now turn the

presentation over to Dr. Moldovan.

DR. MOLDOVAN: Thank you, Liam.

Good afternoon, everyone. For the record, Brett Moldovan.

First, I would like to describe the operation of the calciner and its exhaust and scrubber system at Key Lake.

The calciner is essentially a vertical furnace through which precipitated yellow cake is further processed to produce a dried uranium powder that is the final product of Key Lake. This is referred to as calcine or more commonly as yellow cake.

The calciner has a multi-stage scrubbing system. The purpose of the scrubber system is to cool the off gases from the calciner and remove or scrub any of the fine particulate contained in the exhaust gases.

This exhaust system is designed to capture fine uranium dust particulate that is then recycled back to the yellow cake precipitation process.

If I can draw your attention to the figure, the ducting connecting the calciner to various scrubber components is constructed of stainless steel

with a thickness of about one-eighth of an inch. The main section of ducting that I would like to focus on is between the calciner and the quench tower.

To provide a sense of scale, this ducting has a diameter of 18 inches and is 40 feet in length.

Bear in mind for some of the later discussion, you can see the extent of the other ducting in this picture that connects other elements of the scrubber system.

In the upcoming slides, we will discuss in greater detail the location where the small amount of calcine was released in the section of the ducting shown on the diagram by the letter X.

With that context, let me provide you a brief summary of this event.

During the course of installing new piping, workers on the fourth level of the yellow cake building observed what they believed to be calcine material on the floor and on the equipment in their area. These workers left the area and then notified the yellow cake operators, who restricted access.

The subsequent clean-up collected about two cups of this material.

Cameco's initial investigation

confirmed that this release was localized and contained entirely to the fourth level of the yellow cake building. Further, there was no release to the environment.

Please note that the picture on the left is different in this version of the presentation. This picture shows the weld seal separation where the calcine material was released. The insulation and the cladding are removed in this image.

The mill operators as detailed in the previous slide conducted the clean-up after donning personal protective equipment, including passive respirators.

Following the clean-up, Cameco further restricted the area by designating it as a radiation work permit area. As well, the entire yellow cake building was designated as a respirator zone.

Further investigation identified the source as a separation at a weld seal between two sections of the calciner exhaust ducting on the fourth level of the yellow cake building.

Cameco then voluntarily initiated a safe shutdown of the entire mill at approximately noon on February the 17th. We notified CNSC staff of the event as well as the decision to shut down the

operations to conduct further investigation.

Before we proceed any further with a description of the actions we have taken, I believe it is important to talk about the enhanced monitoring of the three workers who first observed and responded to the calcine material.

In accordance with Cameco's corporate standard, we placed these three workers on an enhanced bio assay monitoring program. The results showed that one worker, the individual who was closest to the calcine material, received a dose above the weekly action level of one millisievert.

The dose calculation for this specific event was 1.06 millisieverts. This resulted in a dose of 1.16 millisieverts for the full week of work.

This remains well below Cameco's internal guideline of 20 millisieverts per annum and the annual regulatory limit of 50 millisieverts. Further, the enhanced monitoring showed the other two workers in the area did not receive a discernible dose.

Cameco discussed results with the employees in question and the notified the CNSC. The next business day, we also posted information related to this event on our web site.

During the period in which inspection and repairs were under way, Cameco kept Key Lake employees up to date on this event using regular toolbox meetings. Cameco continued to maintain area controls, including restrictions on access and requiring respiratory protection throughout the yellow cake building to manage the potential radiological risk.

With regard to immediate corrective actions, Cameco removed insulation and cladding on all of the ducting associated with the calcine scrubber and exhaust system in order to conduct detailed inspections and complete repairs.

Insulation and cladding was removed on all sections of duct work shown in the previous diagram, including ducting that contained -- connects other elements of the scrubber system all the way to the exhaust stack.

Thickness testing of the affected ducting showed there was no change in thickness as compared to original design and installation.

The assessment conducted by our maintenance engineering department suggests the ducting was likely damaged by load or impact during recent construction activities related to the new

calciner system. We believe the initial damage to the ducting at the particular point where the release of calcine occurred caused stress along the length of the ducting and resulted in 11 other weld separations.

Inspections also found weld seals throughout the rest of the scrubber system ducting were in good condition.

The identified weld seals were repaired and tested using dye penetrant as shown in this photo before the insulation and cladding were restored.

In total, Cameco had the mill shut down for 12 days to conduct the inspections and complete the necessary repairs.

As the work proceeded, Cameco also installed inspection and clean-out ports along strategic sections of the ducting. Further, we installed two additional duct hangers to provide enhanced structural support.

Through the restart period, Cameco put in place enhanced radiation monitoring for this area. Swipe samples were also taken by the radiation department to confirm the effectiveness of the clean-up.

Additional visual inspections and

radiation monitoring will remain in place until the new calciner is fully operational.

In addition to being provided with Cameco's safe restart plan for the mill, CNSC staff were also able to observe progress of the repair work during their inspection visit.

Cameco has continued to make significant investments in the Key Lake mill to ensure continued safe, clean and reliable operations. One of the most significant investments under way is the replacement of the existing calciner with the new calcining system.

We expect the existing calciner will continue to operate through the balance of 2015 while the new calciner is being commissioned.

We are confident that the inspections and the subsequent repairs to the calciner exhaust and scrubber system will allow for the continued safe operation of this equipment.

Cameco will also continue to conduct scheduled preventative and predictive maintenance activities on the existing calciner.

As a learning organization, we have implemented a design change to the new calciner and, more specifically, Cameco decided to install

inspection and clean-out ports along its exhaust system. This will increase confidence that the integrity of welds can be inspected on a routine basis.

With that, I will turn the presentation back to Liam Mooney.

MR. MOONEY: Thank you, Dr. Muldovan.

When Cameco initiated a root cause investigation into this event, we decided that the earlier January event involving the calciner at Key Lake would also be included in that scope. This root cause investigation is well under way, and we expect to have the final report by mid to late April.

Cameco's corrective action process will ensure that lessons learned will be shared at all of our operations.

With the results of the investigation in hand, Cameco will be in a position to submit our formal response to the request for information sent by CNSC staff on March 11th pursuant to subsection 12(2) of the General Nuclear Safety and Control Regulations.

To summarize, these calciner-related events are of concern for Cameco. We feel that our response to them has been systematic and timely.

Further, our programs, systems and

training provide defence in depth to prevent these events from occurring and limiting the potential consequences if they do happen. We believe the steps that we have taken will allow us to continue to safely operate our uranium milling facilities while protecting both people and the environment.

In conclusion, we want to assure the Commission that Cameco's commitment to safe, clean and reliable production means we are fully committed to addressing these recent events.

We would be pleased to answer any questions that you may have.

THE PRESIDENT: Thank you.

Staff?

MR. NEWLAND: Mr. LeClair will go through the series of actions that we undertook following this event.

MR. LeCLAIR: Thank you, David.

Bonjour, Monsieur le Président, et membres de la Commission. Mon nom est Jean LeClair. Je suis le directeur des Mines et Usines de concentration uranium.

I'll just quickly go over the actions that CNSC staff have taken as a result of this event -- continuation of the original event, actually,

that we reported to the Commission at the beginning of February.

As laid out in the Event Initial Report on page 3, after being notified of this second event, we had a teleconference with Cameco, went through the event, had a number of discussions with regards to what actions Cameco had taken.

On February 23rd and 24th, we conducted an inspection. Mr. Mark Langdon and Mr. Tom Gates, who are in Saskatoon by video conference, were actually involved in the inspection that was conducted on February 23rd and 24th where we went and reviewed the event, had discussions with Cameco, reviewed the corrective actions that have been taken, actually went and looked at the welds and the repairs that have been done on the duct, reviewed the start-up plan and the enhanced monitoring program.

And based on this review, we were satisfied that Cameco had taken appropriate actions -- immediate actions with regards to addressing the event and allowing for a safe restart of the calciner and the mill.

Following the January 2015 event, we'd already provided verbal notification to both AREVA's McLean Lake and Cameco's Rabbit Lake operations that

both are the other operating uranium mills in Canada with regards to them reviewing the event from January.

As a result of the event that occurred in February, as part of our graduated enforcement, we then issued a 12(2) request requesting that both Cameco and AREVA, for their operating mills, review the design and operational features that help prevent unplanned releases of yellow cake into the work environment, to review the equipment processes and procedures that are used to monitor and identify if there's any weakening of the containment systems that might lead to unplanned releases of yellow cake, to review the radiation monitoring programs to -- and equipment and procedures to identify if there's a way that we can better identify more quickly a release of yellow cake into the work environment and, as a result of these reviews, any corrective actions and implement schedules to address any deficiencies that have been noted.

We continue to monitor the progress of the operations that have now been restarted. We issued the Event Initial Report that you have before you today.

We will be waiting for a final event report in association with this event, in addition,

the responses to the 12(2) request.

In the Event Initial Report, what we're proposing is to come back to the Commission as part of the uranium mines and mills annual report in the fall and provide a full debrief to the Commission with regards to the outcome of the final investigations and the responses to the 12(2) request.

MR. NEWLAND: Thank you, Jean.

That concludes our remarks. Thank you.

THE PRESIDENT: Okay. Thank you.

Let me start the question period with Dr. McEwan.

MEMBER McEWAN: Thank you, Mr. President.

Perhaps I can just try and understand again what happened.

So if we go to slide 3 from Cameco, the very helpful diagram. So from the calciner to the quench tower, you said, is about 40 feet.

DR. MOLDOVAN: For the record, Brett Moldovan.

Yes, that's correct.

MEMBER McEWAN: And in those 40 feet, you found 12 weld breaks.

DR. MOLDOVAN: That is correct. There were a total of 12 weld seal openings on the ducting.

MEMBER McEWAN: So how many welds are there in those 40 feet?

DR. MOLDOVAN: I don't have -- for the record, Brett Moldovan.

I don't have an exact number of welds that were along there. I would estimate there's probably around 30 weld sections along that 40 feet.

MEMBER McEWAN: So something between a third and a half of the welds had broken, ruptured, whatever.

DR. MOLDOVAN: For the record, Brett Moldovan.

That's a fair estimation.

MEMBER McEWAN: So is it likely that all of those breaks are going to occur at the same time in response to a single event?

I think you mentioned that you felt that it was an impact injury.

DR. MOLDOVAN: For the record, Brett Moldovan.

Through routine inspections and also the days leading up to the event where we saw the calcine released, there was no release of calcine from

the -- that section of the ducting.

In addition, the workers that were working in that area had submitted urine samples, routine urine samples, the day prior. Their results came back less than detection.

And based on our engineering assessment that was conducted once the cladding was removed, the results of that engineering assessment suggest that there was a load-bearing event on the ducting or an impact on the ducting, and the initial load-bearing episode or impact caused the initial weld seal failure and then the impact caused further weld failures when there was calcine starting to build up in that section of ducting and the load bearing that happened.

So we suggest that yes, the 11 following weld failures were a result of the initial weld seal break.

MEMBER McEWAN: So explain to me how that can happen.

THE PRESIDENT: And just to add, is that the same explanation for the first incident, then, in January?

MR. MOONEY: It's Liam Mooney, for the record.

And I'll ask Dr. Moldovan to expand on the differences between the January event and the February event, but it's important to realize as well that there was insulation and cladding over this exhaust ductwork, so it wasn't that necessarily visibility in relation to the load and the sag that then led to the compromising of the weld seal.

Ultimately, the area where the calcine material came through was one of the 12, but there was insulation and cladding in place for the remainder of the exhaust piping that prevented it from coming out from other parts of it.

DR. MOLDOVAN: So for the record, Brett Moldovan.

Just to expand on that a little bit more, first of all, in the diagram, if you can focus your attention on the exhaust fan, the way that the calciner's engineered is that the exhaust system is actually pulling from the calciner and not pushing from the calciner through the exhaust system. It's a very important point when we talk about the ability for calcine to be released from this particular section of ducting.

This ducting between the calciner and the quench tower where we saw the event occur is

actually under negative pressure. And when we saw that initial weld seal failure, what had happened was it created an opening and there was a reduced vacuum in that area although the instrumentation showed that the system did remain under a negative vacuum or negative pressure.

And what happened is there was a little bit of cascading of calcine. It's a very heavy product, as you're well aware. The final product from Key Lake started to settle in that section of ducting and then built up and built a bit of a load, and that's what caused -- we suggest caused the 11 other weld seal failures.

I'll pass the --

MR. HIMBEAULT: Kevin Himbeault, for the record.

I just -- to give an analogy, I guess if you took a flexi straw and you looked at a flexi straw and you kind of flex that over, you get that movement in the rest of the system there. That's what we suspect happened when we looked at it. There was that initial -- that initial area where there was that load impact on it, caused a weakening and an opening of the weld seal at that point.

What it results then is it removes the

laminar flow through that exhaust -- that exhaust ducting, creates some turbulence where you could get calcine starting to accumulate in that ducting.

The system wasn't designed originally to hold that much load, so when you got the accumulation of calcine in that back area, it caused it to collapse. As it collapsed at that location, it basically popped the seals on the rest of the -- on the rest of the ducting in that area.

MEMBER McEWAN: So how often do you actually check the integrity of the welds?

DR. MOLDOVAN: For the record, Brett Moldovan.

It is not normal practice to check the ducting and remove the insulation and cladding off of that material.

When we did the inspection on this particular section of ducting, as I noted in my presentation that the thickness testing showed no problem with the thickness of that ducting and then, furthermore, throughout the rest of the scrubber system, what we did is we actually removed all of the cladding off of the rest of the scrubber system, if you look at the diagram there, from the quench tower all the way through to the exhaust system.

So a significant amount of insulation and cladding was removed. We did the thickness testing and weld inspections in those areas as well and saw that there was no issue.

So basically, what we -- the engineering assessment suggests that preventative and predictive maintenance would not have prevented this incident from occurring. It was the result of an impact or a load to the ducting.

MEMBER McEWAN: So I guess my final question, if there is an impact sufficient to cause this degree of damage, would the impactor, the person causing the impact, not have noticed it and reported it?

DR. MOLDOVAN: So for the record, Brett Moldovan.

The impact or what we've assessed from our engineering assessment is that there was some deformation of the cladding, but not significant enough to see a collapse of the piping at the particular moment of instant there when the -- the cladding was struck or there was a load-bearing incident on it.

Further, the results of seeing calcine in the work area suggests that it was a recent event

and the contractor workers that were working in the area did not make notice of it and provide notification to Cameco.

MR. MOONEY: It's Liam Mooney, for the record.

And I'd add that Key Lake does have a strong reporting culture, and that's one of the things that's enforced with both workers and contract workers, and the expectation would be that, at the end of the root cause investigation and some of the corrective actions, that we might be revisiting the reinforcement of reporting of even minor incidents and make sure that they're brought to the attention of supervisors and staff.

But we, again, are awaiting the results of that corrective action investigation.

MEMBER McEWAN: Just a final question.

Do you have any idea what the impact could have been caused by?

DR. MOLDOVAN: For the record, Brett Moldovan.

As I mentioned in the presentation that I provided this afternoon, there's a significant amount of what we call greenfield and brownfield going on around the new calciner.

The new calciner system is being constructed in a separate building, and that work is being conducted away from the main process areas at Key Lake. However, there's also a significant amount of piping work that's being constructed, what we call brownfield, or within the existing process.

And directly above that ducting that's -- that was impacted, there's new process piping that was being installed. There's scaffolding right up beside this ducting, and there's new process piping being installed directly above the ducting. So our engineering assessment suggests that this new process piping which is, I believe, 4 inches in diameter, is what was set on top of the ducting or else had an impact on the ducting itself.

THE PRESIDENT: So I'm still waiting for an answer. So it bears no resemblance to what happened in the first incident?

DR. MOLDOVAN: For the record, Brett Moldovan.

It is a different instance where we saw on the first incident where we saw where on the centre shaft and that conveyance of air -- it's the waste heat air coming from the cooling fan -- gets captured and transferred over to our crystallization circuit. That air

is not supposed to have any uranium in it or calcine in it and that's used for waste heat in our crystallization circuit.

In this particular instance this ducting, as I mentioned in the presentation, it is supposed to capture the waste off gases from the combustion process and at the same time it's capturing fine particulate of calcine as well to the scrubber system. So they are two different systems, in fact, off of the same -- off the same calciner vessel.

THE PRESIDENT: Ms Velshi...?

MEMBER VELSHI: Thank you.

So if you believe that the primary reason why you had this problem was this impact, I'm trying to grapple with the action staff have taken where they have asked other licensees to look at their calciner operation and how do you address this particular issue that it could be an impact that's causing all these problems as opposed to the other deficiencies in the management system?

The review that you are expecting other licensees to do, would that have prevented this from happening if this was caused by an impact as you are moving other equipment around?

THE PRESIDENT: Let me piggyback.

CNSC, you asked for 12(2) information.

Presumably from those two incidents you drew -- you got concerned that something systemic is going on here, that everybody should review their stuff. So what was it that caused it, not a one-off impact?

MR. LeCLAIR: So if you will permit me, so perhaps clarify it. The first thing is, certainly the two events are not related in the sense that if there was -- and I say if there was an impact to the pipe that was what led to this second event, that would not have caused the first event in January, to clarify that for you, Mr. President.

The important thing here is, and I think you alluded to it a bit in a number of your questions, is that if in fact you have something that causes that pipe to fail, how do you know when it failed and how do you know soon enough when it failed? Some things can happen. Things happen, events happen. We are waiting for the final investigation report, that investigation to in fact confirm what Cameco is stating here.

But the main thing is there was no way of knowing that in fact you had even an initial weld failure because the cladding and the insulation prevented you from being able to visually observe it. So is there a way that you can identify when in fact something may be happening?

Similarly, in the case of the January

event, how do you know before you are now seeing the calcine yellowcake in the ammonium sulphate dryer? So it's about how do you know when you are getting either a partial failure or imminent failure sooner rather than later? That's part of it.

The other thing is, if you look at this particular system in terms of the design -- I'm not sure that Cameco elaborated enough with regards to there is vibration induced within this pipe as a result of the fan drawing on it, so there would be stress due to vibrations within the pipe. There is also expansion and contraction within the pipe because you have a furnace that is running at 850 degrees that's going to heat up that pipe and bring it up to quite a high temperature and then, as the pipe cools, there is contraction within the pipe. So this would also be inducing stress when in the pipe through heating and cooling.

So a combination of those things. If you have an initiating event where you dent the pipe, that would not -- that could influence how the vibrations are happening within the pipe and also how heating and cooling are going to influence stresses within the pipe. So those are all factors that can contribute to the performance of that pipe.

But if we can't know -- we have to be able

to know, one, is there a way that we can identify when there is, either as a result of an operation or design issue that we will know in advance, so one of the examples Cameco has done now is the installation of a port that would allow you to actually go in and look at the pipe, so that whether it's as a result of a dent or as a result of some other stresses, that you could observe it and know it sooner.

Similarly, again when we are looking at the event in January, was there a way that you could have gone in and been able to visually observe it before you had a 3 cm x 20 -- I can't remember what the dimensions were of that hole that we reported back in January. If you look at the monitoring programs, is there another way of knowing that in fact there is a release beyond the fact that you observe, in this case 2 cups of calcine yellowcake on the floor beneath the pipe? Is there a way of knowing that before you get sufficient accumulation that it will then be visually observed?

So in effect the 12(2) request, the intention is really to be able to, one, prevent the situation from occurring but, two, also be able to become aware as soon as possible when the event is occurring so that you can take corrective actions more quickly and be aware of a situation earlier and be able to respond earlier

rather than have the actual uptake and having to deal with workers that have not been exposed.

MEMBER VELSHI: Thank you. That is extremely helpful, which sort of leads to the question that after the January incident, if we look back and see what we could have done differently, you know, staff, Commission, to do that kind of review then -- because I remember us having extensive discussion about our ability to inspect the system adequately -- could something like this have been prevented? Did it need a second incident for us to take this action?

MR. LeCLAIR: What I would say is we actually had already initiated the action, because following the January event we in fact asked both Cameco and Areva to look at the designs, look at the operation of the facility. The second event just reinforced it that much more. Why it happened to happen one month after I'm not quite sure, but it happened and as a result of that, that's why we brought to the formula the 12(2) requests. So in effect the requests had already been made.

If you look at the timelines between the two events, they are actually very close. We are talking about roughly a month between the events, so we had already initiated conversations with both AREVA and Cameco to have them look at this. This second event just raise the bar

that much higher, which is why we went with a 12(2) request that fundamentally captured what we had already communicated with AREVA and Cameco.

So now both Cameco and Areva will be providing us formal responses and in fact are going to look now at both events with regards to fundamentally the same basic issues, again, even though the initiating events for both of them may not be the same.

MR. NEWLAND: Just to add to that, the 12(2) requests really just formalized some actions that we had already initiated.

THE PRESIDENT: I would like to hear from our inspectors whether as a result of all of this are they going to change some of the inspection frequency protocol checklists into other systems?

MR. LANGDON: Hello. Mark Langdon, for the record.

We have a system now where we go to each of the operating sites about six times a year. For the mills I think definitely an issue. We will pay a lot more attention to the dryers, the calciners, et cetera, and take a look at them.

We are also going to be reviewing all the reports that come out of Cameco and Areva on this and their discussions on what they see. I think we may see more

action on their part for installing ports and these sorts of things for better monitoring on their end and, as Jean LeClair pointed out, possibly monitoring to find RP issues faster or more efficiently. The inspections themselves are difficult because, again, Cameco is looking at things where they can't see. This had cladding and insulation on it. So the inspectors also couldn't see through this.

But we will keep that in our mind in our inspections when we see areas that could have calcine dust or other contaminants within it that if they are -- we will be asking, "How are you inspecting these types of piping?" I think at this point that's about the most we can do. We are going to wait for all the corrective actions and taproot investigations to see what they come up with to maybe more formalize that.

THE PRESIDENT: Thank you.

Ms Velshi...?

MEMBER VELSHI: My last question is to Cameco.

As you were conducting your root cause investigations of the two incidents and this 12(2) that has come out from staff, would your scope of investigations have looked at these factors in any case, the ones that the staff have asked you to look at?

MR. MOONEY: It's Liam Mooney, for the

record.

We had initiated our root cause investigation prior to receiving the subsection 12(2) requests from staff. That being said, it gives us pause to take a close look at what the scope of that proposed investigation would be and ensure that we are touching all the bases. One of the pieces that we are really focused on is sharing that use of experience.

AREVA, as has been mentioned, is a JV partner with us on the Key Lake Mill, so they are very interested in that. And similarly for Cigar Lake, the ore there is processed through the McClean Lake Mill. So we are interested in making sure that there is a sharing of experiences and any lessons learned from either of the events is the subject of a look by the management and application as required.

THE PRESIDENT: Thank you.

Monsieur Tolgyesi...?

MEMBRE TOLGYESI : Merci, Monsieur le Président.

According to this Event Initial Report there were 12 failures of various sizes, up to one complete failure. What's a complete failure?

DR. MOLDOVAN: For the record, Brett Moldovan.

What is meant by a complete failure was complete separation of that weld seal 360 degrees around the circumference of the pipe or the ducting.

MEMBER TOLGYESI: That means that it was a kind of slot across the pipe?

DR. MOLDOVAN: For the record, that is correct.

MEMBER TOLGYESI: Yes. Now, this is a 40-foot pipe, 18 inch diameter. How many sections do you have over this 40 feet? Is it one pipe or two or three welded together or how is it installed?

DR. MOLDOVAN: For the record, Brett Moldovan.

There are several sections of the pipe. I don't have the exact number of the number of sections or welds. My previous estimate was around 30 welded sections along that 40-foot section of ducting.

MEMBER TOLGYESI: That means now there is about a foot and a half ducts all welded together, which I have a hard time to conceive because, you know, when you install piping you don't start to install one and a half foot long pipes and weld them together. You would install one item, one or two 20-foot long pipes.

DR. MOLDOVAN: It's a little bit different than piping. It is actual adduct material and it is rolled

stainless steel ducting, not meant to have any long distance loadbearing capacity. So that is why we have used the shorter sections.

So just to provide it in context, it is not an actual pipe where you would see maybe 12 or 15 foot lengths of piping where you can have it flanged or welded. With this rolled stainless steel you need to have shorter sections.

MEMBER TOLGYESI: So I am quite surprised that if you have the shortened sections you have only one support for these 40-foot long pipe.

DR. MOLDOVAN: Yes, that's correct. We identified that and part of our corrective actions we installed additional pipe support hangers along that section of ducting.

MEMBER TOLGYESI: What are the reasons for insulation and cladding? Insulation, I suppose it's because it's hot, okay. What about cladding?

DR. MOLDOVAN: So for the record, Brett Moldovan.

As mentioned by Mr. LeClair, the temperature within that calciner is in fact 850 degrees Celsius and the essence of that ducting system is to capture the combustion gases, cool them within the quench tower and the impingement scrubber. So yes, that piping is

coming out very hot. The insulation is there of course to protect the workers and keep them isolated from the ducting.

The purpose of the cladding is simply to hold the insulation in place. So the cladding is just like a metal shrouding that is going around, around this ducting to hold the insulation in place so it's not falling off.

MEMBER TOLGYESI: It doesn't have anything to do -- you know, you were talking about load. It's enough negative pressure in that system because when I'm looking it's quite long. It's about -- you go through a quench tower and went through the scrubber and impingement to the exhaust fan, which is -- I suppose the other pipes are what, less than 18 inch diameter?

DR. MOLDOVAN: For the record, Brett Moldovan.

The size of the piping does get smaller as it goes through the scrubber system.

MEMBER TOLGYESI: Okay.

DR. MOLDOVAN: And that material from the quench tower through to the fluid or, sorry, the mist eliminator, that is actual process piping located in there. That process piping still is quite hot and it is wrapped in insulation and cladding as well right through to the exhaust stack.

MEMBER TOLGYESI: When you were talking about the load, you said it's a load or impact, well construction load.

Load, what kind of load? When you say what is the origin of the load and what was the load, effective load?

DR. MOLDOVAN: Okay. For the record, Brett Moldovan.

So the load, what we suspect that it was is when that particular section of process piping was installed for the new calciner system, the engineering assessment suggests that that section of process piping was set on top of the ducting as a means of temporary support while the workers were doing their rigging and hoisting activities. So that's what we suggest was a load event. Or else the piping was abruptly lowered onto this ducting and that would have been an impact effect event.

MEMBER TOLGYESI: You said that the new calciner will be in another location. Will the new calciner have its own exhaust system or it will be this one which is in place -- will reserve for a new one?

DR. MOLDOVAN: So, for the record, Brett Moldovan.

The new calciner system will have its own dedicated scrubber system and will be completely

independent and isolated from the existing calciner scrubber system.

MEMBER TOLGYESI: So it will be a totally other location?

DR. MOLDOVAN: For the record, yes, that is correct. Brett Moldovan.

MEMBER TOLGYESI: You were talking about a 4-inch pipe in the new calciner. It's new process pipe. What is the purpose of that 4-inch pipe, because it is quite small, smaller than the 18 inch?

DR. MOLDOVAN: So, for the record, Brett Moldovan.

The purpose of that piping that has gone through on the brownfield side, if we will call it, or the mill process side where the existing calciner ducting is located, the purpose of that pipe is to convey the yellowcake material from the yellowcake thickener, so we have a yellowcake material located in that process area and it needs to be conveyed to the calciner.

So the way that the system is set up with the current existing calciner as it comes up to that fourth level and then is fed into the existing calciner, with the new system we have to put in new piping to be able to convey that yellowcake thickener slurry into the new calciner system. So that's what that new process piping

intent is.

MEMBER TOLGYESI: And it will be still quite hot?

DR. MOLDOVAN: For the record, Brett Moldovan.

No, the yellowcake precipitation process that is on calcined product, still in a slurry form, and the precipitation process and that transport process occurs under ambient conditions.

MEMBER TOLGYESI: And in the new calciner you were talking about a totally separate system. The temperatures will not change. I mean when it's coming from the calciner to the quench tower it will be the same temperature?

DR. MOLDOVAN: M'hmm.

MEMBER TOLGYESI: So do you expect to use isolation and cladding on this new system also?

DR. MOLDOVAN: For the record, Brett Moldovan.

Yes, within the new calciner system there will be a dedicated scrubber system. The temperature of the new calciner system will be the same, 850 degrees Celsius, so there will be insulation and cladding around that piping around the new scrubber system.

And, as mentioned earlier, part of our

lessons learned as a learning organization, we did install inspection and cleanout ports which isn't normally part of a ducting system on a scrubber. So part of the original design from the manufacturer did not have those inspection and clean-out ports and that is something that we have added since this event occurred.

MEMBER TOLGYESI: Is there some electromagnetic or other type of testing of ducts? You know, they use that maybe in the oil industry to make sure that they check the state of the pipes because, you know, they have kilometres and kilometres so they don't go around every inch of pipe. But they have some techniques to measure the hot -- I mean the state of those pipes.

DR. MOLDOVAN: Right. So, for the record, Brett Moldovan.

As noted in the presentation and some of the questions that were asked already, the new calciner system we have installed inspection ports on the ducting itself and then also on the cladding itself so we can remove strategic sections of the cladding to be able to do those non-destructive testing on the existing ducting

And further, to add, in the diagram when we were looking at the picture of the current calciner scrubber system from the quench tower through to the final exhaust, we did remove all of that insulation and cladding;

did the non-destructive testing and dye penetrant testing on the existing welds that were there and found them to be in good shape. So it suggests that the entire exhaust system on the existing calciner is still very competent.

MEMBER TOLGYESI: Is there a way or is this 40 foot length or distance that separates the calciner to the quench tower, does it have also kind of a cooling role or it's just because that was the disposition or could it be closer so you will have less exposure to these type of failures?

DR. MOLDOVAN: So, for the record, Brett Moldovan.

The quench tower is the first stage of cooling of this combustion gas or these exhaust gases coming off of the calciner. That section of pipe, the 40-foot section that is 18 inches in diameter, it is engineered and designed to handle those types of temperatures at 850 degrees Celsius.

So as we noted when we did the non-destructive testing, the nominal thickness hadn't changed since we installed that scrubber system in 1999, so it suggests that the engineering design is more than adequate in terms of meeting the requirements.

MEMBER TOLGYESI: So you will put how many supports in that 40 foot, because it will be the same?

DR. MOLDOVAN: For the record, Brett Moldovan.

We have put in two additional pipe hangers for that particular section of ducting. The engineering assessment looked at that section of ducting and determined what the requirements are to ensure that that ducting is protected in the future.

THE PRESIDENT: Okay, I have to move on. Anybody else have any questions?

MEMBER HARVEY: Yes.

THE PRESIDENT: Go ahead.

MEMBER HARVEY: I am the last one.

THE PRESIDENT: I'm sorry. Yes, you are. Yes, you are.

MEMBRE HARVEY : Merci, Monsieur le Président.

The first thing is I'm very surprised that such events happened on a main system of the facility. It's not a secondary system but it's on the main system, the calciner. And I'm also surprised that being the main system that there was work around that system, there was no precaution to -- well, any advice to the contractors to take all the possible care not to touch, if it's the case. So this is the first part.

The other one is you mentioned that there

could have been an accumulation in the pipes and then put a load on this. If this is possible, were there any means to clean from time to time the pipes? Have you done that or was it possible to do this?

DR. MOLDOVAN: Okay. For the record, Brett Moldovan.

To answer the first question in regards to the contractor workers working in that area, for all non-routine work, Cameco conducts job hazard analysis on all this non-routine work to identify risks around the area and one of the advantages that we saw with the job hazard analysis is a real awareness around calcine product, what it looks like, identifying the risks of working in that calcine area.

The workers that were working in that particular area readily notified or noticed that there was this black material that suggests it may have been calcine. They reported that to Cameco immediately and we responded to it in a prompt manner.

So the job hazard analysis identifies the chemical/radiological hazards that are in the processing area as well as safe ways to conduct the work that they were doing and identify the potential risks around rigging and hoisting in that area as well.

To answer the second question, the initial

design or the engineering design of the calciner exhaust system or the ducting back in 1999 when that exhaust ducting was installed was not to have inspection or cleanout ports. Part of our learning is that we have since installed those ports to be able to conduct not only inspections but cleaning of that exhaust ducting and that knowledge is also being transferred over to the new calciner system as well.

MEMBER HARVEY: Last point.

When you detected the failure, what kind of inspections have been performed on those failures? Because when we're talking when did that arrive, sometimes when you get a failure like this, a crack, if you look at the crack, you can sometimes detect if the crack has been there for months, for years or it's very recent.

So what kind of inspection has been done, what type, and would it be possible to find some indication of the proximity of the incident, if this is the case, or even if it's coming from stress and things like that, and were there many differences between those cracks?

DR. MOLDOVAN: Okay. For the record, Brett Moldovan.

When the contract workers were working in that area, as well as the operators, the urine bioassay samples that were collected on a routine basis the day

before the calcine was observed, their urine results came back less than detection limit in terms of uranium intake. So that suggests that the incident that happened with either the load-bearing or the impact was very recent and caused the damage along that section of that ducting.

The extent of the damage was not readily known until we did take the insulation and the cladding off of that ducting to really identify not only where the original release of calcine was but the extent of damage that occurred along that section of ducting.

So based on the engineering assessment, doing routine inspections or preventative or predictive maintenance would not have prevented this incident from happening.

MEMBER HARVEY: I'm not talking before the fact, I'm talking after the fact. Once you've got the cracks, you've got the failures.

DR. MOLDOVAN: Right.

MEMBER HARVEY: Sometimes if you look at it after the fact, when it's done, you can detect if it's yesterday or two years from now.

DR. MOLDOVAN: I see.

MEMBER HARVEY: I mean there is some type of inspection of the material that can give some indications on the -- well, like I mentioned, the proximity

or the, you know, time.

DR. MOLDOVAN: For the record, Brett Moldovan.

There's no means of effectively telling the time of a weld seal failure or weld seal break but just based on the fact that the calcine was recently observed in that work area, the day of that incident, suggests that that was the period of time when that weld seal actually opened up.

MEMBER HARVEY: Let me ask staff if they have some comments about that.

MR. LeCLAIR: The only comment I would provide is I'm not sure I would agree that the event could have occurred within a 24-hour period and the only reason why I might say that is that since the cladding and the insulation would have held the material for some period of time because it's surrounding the pipe, how long that calcine yellowcake was now getting into the insulation to eventually have the cladding and insulation to open up enough to allow the calcine material to fall out, I wouldn't want to try to predict the timelines in terms of the initial crack in the weld to having the calcine -- it's under vacuum, this pipe, so there had to be an accumulation over some period of time to eventually have sufficient material within the insulation and cladding to finally come

out of the insulation and cladding. So I'm not sure that -- and perhaps I'm misunderstanding Mr. Moldovan here, but in terms of the initiating event I think it's a bit difficult.

If you look at the weld pictures, one thing in our inspection, we did not get a chance to see the actual broken welds. When we were onsite, the repair work had already been undertaken, so we could not see the broken welds as they were. There are photos that were taken. Perhaps somebody can look at those.

There's no evidence of corrosion around the weld breaks or anything that would indicate some, you know, extent of period of time where there would be an opening and see corrosion along those points.

I'm not an expert on looking at weld openings to see whether you can get an indication of time but I certainly would say that I have some difficulty with a statement that the event could have occurred within a 24-hour period and then you would have had the release. I think it could be quite a bit longer than that before you get sufficient material --

MEMBER HARVEY: Well, my point was that if you can have a certain idea of the longer period, maybe the problem is different than just to say we have an impact on the -- so if it's not an impact, if it's a question of

structure, of design, it's not the same thing.

MR. LeCLAIR: Well, perhaps if I could just add.

If, for instance -- and I'll try to be cautious because they do need to submit their detailed investigation that elaborates on --

THE PRESIDENT: Can I remind everybody this is an initial report.

MR. LeCLAIR: Yes.

THE PRESIDENT: We already spent an hour on a lot of data which we don't have, so let's not assume what the final report will look like. When it comes to us, I'm sure there will be lots of questions but the line of questioning should give you a hint as to what the report should address, okay?

So just to finish -- I cut you off. Do you want to finish and Mr. Harvey will continue?

MR. LeCLAIR: Yes. All I wanted to say was that the initiating event could be as a result of an impact but that could happen two weeks before.

Again, the timelines are hard to determine because the first event is to actually have the opening in the weld. The next thing that then needs to happen, the material needs to come out of the pipe, it has to accumulate sufficiently to come out of the opening, it has

to get through the insulation, get through the cladding to finally report to the floor for it to be observed.

So the initiating event could be an impact but when that impact occurred and how long it took for that calcine yellowcake to finally get out through the insulation, through the cladding and onto the floor, that could have taken a longer period of time.

MEMBER HARVEY: My last point was that if you repair something very quickly and you start again, you can mask the effective cause -- I mean the main cause of the problem.

MR. MOONEY: It's Liam Mooney for the record.

We do have the root cause investigation under way that will look deeper than the engineering assessment that has been completed. And again, we are focused on the radiological impacts and the event was an unplanned release of calcine material. So we have some confidence around the window in which that occurred but we do want to see the root cause of it.

I think the other point that we would make in relation to the operation of that facility was that it had operated for 15 years without an event such as this and so the load or the impact that led to the event was unusual in the circumstances. So we have a good deal of confidence

in the safe restart and the operation since the restart of that facility has proven it out in that regard.

THE PRESIDENT: Okay. Look, the last point is in the report. I'm less concerned about the radiological issues than toxicity. I know in the staff report they're talking about the uranium kidney deposition was about .3. I don't know what it means. I don't know about the severity, health impact, et cetera.

So I hope in the final report you will deal not necessarily with the radiological issue rather than the toxicity, which is the long-term monitoring of staff, I assume -- require long-term monitoring of staff.

MR. MOONEY: It's Liam Mooney for the record.

On the matter of chemical toxicity, in relation to it, the amount of time that the worker was seen and the levels that were seen in the urinalysis gives us confidence that there's negligible risk associated with the chemical toxicity.

The root cause event will -- investigation will be focused on the causes of the event and not the outcomes but I can give you some assurances in relation to the testing that was conducted that the chemical toxicity risk is extremely low, negligible in the circumstances.

THE PRESIDENT: Okay. Thank you.

We will -- I don't know, do you have a time when the report will be available?

MR. LeCLAIR: Mr. President, in the 12(2) request, a request for initial response was asked for March 20th. Both Cameco and Areva provided written responses on March 20th.

In Cameco's response there's a commitment made to provide their final report by mid-May of this year, is when we will get their report, after which we will have to do our review, which is one of the reasons why we had recommended that we would come back to the Commission as part of the Annual Performance Report for Uranium Mines and Mills. At that time we could provide the outcome of our review of the report and any follow-up actions that we took as a result of that review.

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

We will take a 10-minute break. Thank you.

--- Upon recessing at 4:01 p.m.

--- Upon resuming at 4:15 p.m.

THE PRESIDENT: Okay, we are back.

I have to go through the agenda item and ask: Are there any other Event Initial Reports?

Okay.

CMD 15-M12/15-M12.A

Oral presentation by CNSC staff

THE PRESIDENT: So we move to the next item on the agenda, which is a decision item on REGDOC-2.3.3, Periodic Safety Reviews, as outlined in CMDs 15-M12 and 15-M12.A.

It says here, Mr. Torrie, you will lead the charge. Please proceed.

MR. TORRIE: Good afternoon, Mr. President, members of the Commission.

My name is Brian Torrie, the Director General of the Regulatory Policy Directorate.

With me today are:

- Barclay Howden, Director General of the Directorate of Power Reactor Regulation;

- Sanya Simic, Senior Regulatory Program Officer, Bruce Regulatory Program Division;

- Colin Moses, Director of the Regulatory Framework Division;

- Susan Fundarek, Regulatory Framework Officer in the same division; and

- Victor Snell, a Consultant with VGSSolutions.

We are here today to request that REGDOC-2.3.3, Periodic Safety Reviews, be approved for publication and for use by CNSC staff in assessing the periodic safety reviews conducted by nuclear power plant licensees.

Regulatory documents are used by the CNSC to provide clear regulatory expectations for facilities and activities under our oversight.

As you will know from previous documents, documents generally provide both requirements and guidance. Requirements are mandatory once included in the licensing basis and lay out what must be done to meet the expectations of the document. Guidance helps inform licensees and applicants on how the requirements should be met as well as giving information about how CNSC staff will evaluate their applications.

The CNSC has a robust process to develop our regulatory expectations, which includes rigorous analysis of modern domestic and international best practice as well as comprehensive stakeholder consultation and engagement activities.

This process helps ensure that our regulatory documents are reasonable and comprehensive, clearly addressing issues that control and enhance nuclear safety, security and protection of the environment.

Regulatory documents may be applied using a graded approach which allows for the documents to be adapted to suit the risks and particular characteristics of a regulated facility or activity.

Once published, regulatory documents support both licensing and compliance, describing clear expectations against which regulatory activities and facilities are assessed.

To enhance accessibility of our regulatory expectations, the CNSC structures our regulatory documents according to the framework shown here.

REGDOC-2.3.3 is situated within section 2.3 of the framework, Operating Performance. This section also includes regulatory requirements and guidance for the construction and commissioning of reactor facilities and for accident management.

I will now turn the presentation over to Barclay Howden, Director General of the Directorate of Power Reactor Regulation.

MR. HOWDEN: Mr. President, members of the Commission, I would like to start off by providing an overview of the presentation.

We will provide contextual information, explain the consultation process and outcomes, then move on to explain how the document,

if approved, would be implemented. Finally, we will finish

with the CNSC staff's conclusion and recommendation.

For background, a periodic safety review, also known as a PSR, is a systematic evaluation of a nuclear power plant against modern safety codes, standards and practices. It is normally done on 10-year intervals.

When done, it provides an overall holistic view of the safety of a plant, which leads to practical improvements that enhance safety.

PSRs are forward-looking and fit into the view that improvement of NPP safety should be done on a continuous basis. From a benchmarking perspective, PSR has been adopted by many IAEA member states as a key practice in their regulatory toolbox.

You will recall the Integrated Regulatory Review Service mission to Canada in 2009 and the 2011 Fukushima Task Force work. Both recommended that the CNSC formally adopt the use of PSR.

And we are no strangers to this. The Integrated Safety Reviews, known as ISRs, performed to support refurbishment projects are based on PSR methodology.

Integrated Safety Reviews look at extension of plant life another 30 years, whereas PSRs look at the next 10 years of operation.

What is being proposed is an evolution of

our current practices.

This slide emphasizes that the Integrated Safety Review is performed once in the lifetime of a plant and it is intended for refurbishments, while the PSR is performed more frequently, typically three times throughout the lifetime a plant, and is intended for licence renewals.

The slide also shows the time scales of Integrated Safety Reviews and PSRs. As stated before, we have significant amount of experience already.

This slide has been extracted from the CMD to remind people on the comparison of ISRs and PSRs.

An important thing to note is that if a licensee has already completed an ISR, we consider it to be the first PSR should the Commission decide to adopt PSRs.

REGDOC-2.3.3 sets out our requirements for the conduct of a PSR. It is based on IAEA document SSG-25, Periodic Safety Reviews for Nuclear Power Plants. SSG-25 is a very detailed document that provides all the details on how to conduct a PSR right down to the task level.

You will see in the third bullet of this slide that there are four phases to a PSR:

- preparation of a basis document;
- conduct of the safety factors reviews;
- the compilation of a global assessment report; and

- the preparation of an Integrated Implementation Plan which includes the proposed safety improvements along with timelines for implementation.

REGDOC-2.3.3 has gone through extensive rounds of public consultation.

A draft version was provided to stakeholders for consultation in the summer of 2014. During the consultation period, the CNSC received 26 comments from four reviewers. All were from industry.

Subsequent to that, four further comments were received on the revised draft in January 2015 and a final draft was distributed to stakeholders in February 2015.

For the next three slides, we'll outline some of the key comments from stakeholders.

The first is on the scope of subsequent PSRs once the first is done.

We concurred with the comment in that subsequent PSRs can draw upon the first and can look at changes that have occurred. However, this would not relieve licensees from looking at each safety factor and performing a global assessment per the PSR methodology to make sure that previous conclusions remained valid.

The second key comment focuses on the potential duplication of requirements.

We have addressed this concern as we expect licence renewal and PSR to work together seamlessly so licensees won't have to deal with the same issues twice.

The third key comment focused on the safety factor on radiation protection. Again, the concern was over duplication of requirements.

We narrowed the radiation protection safety factor down to four elements, recognizing that programmatic elements still need to be considered but the information can be drawn from ongoing regulatory activities.

Regarding implementation, if approved, REGDOC-2.3.3 will be published on the CNSC website and made available to licensees and stakeholders. It will supersede RD-360 "Life Extension of Nuclear Power Plants".

I would now like to discuss the implementation with regard to licensing. Our current licensing process does not include PSR. What we do is we ensure that current licensee programs account for modern codes, standards and practices. We evaluate performance over the previous license period and we look at plans over the next license period. The focus is on maintaining safe operation and addressing existing or emerging issues. The process has been effective. PSR builds on this process. It not only looks at maintaining safety of operations and

current issues, it looks for ways to improve safety.

If approved, REGDOC-2.3.3 would be used to ensure that the licensee steps back and looks at all their issues holistically. If approved, REGDOC-2.3.3 will require PSR every 10 years, allow previous ISRs to be considered the first PSR, ensure the Commission has regulatory control over safety improvements and ensure transparency through yearly updates under the NPP Annual Report.

If REGDOC-2.3.3 is approved, we would bring together at a future license application the overview of past performance with the forward-looking improvements outlined in the integrated implementation plan that would be produced from a PSR. We would need new license conditions to be added to licenses at license renewal and we would use the LCH, which is the Licence Condition Handbook, to track milestones and timelines for an IIP and to work on subsequent PSRs.

Here is an example of potential licence conditions, and we have two. I would like to talk briefly about the licence period. To do PSR, 10-year licence periods make sense and this is what we favour. Ten year licence periods would facilitate alignment between the licence renewals and PSRs, which is preferable since much of the effort and review required for each of these

processes is redundant.

We have commissioned an expert, Dr. Snell, to advise us on the PSR periodicity and licence duration. Dr. Snell will present his research and opinion following this presentation for your information and consideration.

With regard to periodicity of PSRs, 10 years is the benchmark. This slide provides the criteria to support that period and we have outlined this in the CMD. IAEA document SSG-25's expectation is that to provide timely input the PSR should be completed within three years and normally lasts for the second or subsequent PSRs.

This figure shows that the PSR preparation should commence three years prior to license renewal. It also shows when the public hearing for license renewal would occur and that the IIP, the Integrated Implementation Plan, would need to be considered by the Commission at the time for approval. As well, it shows that we would be using the NPP Annual Report to report progress on a yearly basis. It should be noted that the PSR is complementary to the routine compliance activities and is not intended to replace them.

I would like to speak a bit more about implementation strategy should the Commission adopt PSRs. This example is for illustration purposes, but shows how PSR could be introduced to Point Lepreau. They have done

an ISR already and completed their refurbishment project in 2012. That was when the reactor was returned to service.

They are coming up for license renewal in 2017. At that time the Commission could insert a licence condition requiring the conduct of a PSR during the next five year licence period. If so, this gives you an idea of the work and submissions that would be required during that period. In 2022, during license renewal hearing, the Commission could review and approve the IIP, issue a 10-year licence and require a subsequent PSR to be done. During the 10-year period, the IIP would be implemented and work on the next PSR would start around 2029, seven years into the licence period.

For multiunit stations the IIP may be implemented on a unit-by-unit basis. There would be a need for license conditions to implement the IIP and for the completion of the subsequent PSR. Additionally, we expect that lessons learned will be done after the work is completed on each unit in order to make sure the work on the next unit takes those into account.

In conclusion, as REGDOC-2.3.3 was developed through extensive research and broad-based consultations with stakeholders, we affirm that it is a solid document and the elements are in place to facilitate integration of PSRs into license renewals. These include

license conditions, Licence Condition Handbooks and the MPP Annual Report as our implementation tools. PSRs help improve safety. They provide regulatory predictability to licensees. They allow continued transparency with all stakeholders and they are aligned with international practice.

Based on our conclusions, CNSC staff believe that REGDOC-2.3.3, “Periodic Safety Reviews”, is ready for final approval and publication and we are available to answer any questions you may have.

THE PRESIDENT: Thank you. We would now like to hear from Dr. Snell.

CMD 15-M12.1

Oral presentation by Dr. V.G. Snell

DR. SNELL: Victor Snell, for the record. Thank you, Mr. President, Members of the Commission.

If we could get the overheads on the screen? Fantastic, thank you.

So, as Mr. Howden mentioned, I was asked to give an independent opinion to CNSC staff particularly on the relationship between PSR, periodic safety review, and license renewal frequency and I would like to point out the following disclaimer. Although the work was done under

contract for CNSC staff, the conclusions are mine and any mistakes are my responsibility. I certainly don't presume to represent the views of CNSC staff, as will become apparent actually in parts of the presentation.

And I excluded two other things from my scope. I did not discuss the scope of a PSR. As Mr. Howden says, that's well-defined and everybody knows how to do one. And I touched very briefly on implementation really from a sort of high-level point of view rather than the detail that Mr. Howden presented.

So a bit of a factual background. These are the sort of, I would think, key factors driving the introduction of PSRs in Canada, or potential introduction. Typically, today we renew licences for CANDU NPPs about every five years. In the past it has been shorter, but we have settled in around five years, and they are used as a mechanism for continuing station oversight.

As Mr. Howden mentioned, every plant that has contemplated a major refurbishment has performed in Canada an ISR, which is essentially the same scope as the first PSR, very, very close in scope.

Almost everywhere else in the world a different model has been followed and I will discuss the reasons why. The licence period is much longer and PSRs are done every 10 years. If you look back at the records

of the Convention on Nuclear Safety you can see that Canada was questioned on this issue going back over 10 years on two aspects really: Why weren't we doing PSRs and how come our license renewal was so short, and various forms of that question.

And the answer -- the Canadian statements in answer to that question basically made three points. If you look at our official statements in answer to these questions, they acknowledge the fact that there should be a link between license renewal frequency and PSR. They also pointed out that if you introduce a PSR you really need to think about the most effective use of resources and how you apportion those resources between license renewal and PSR. PSR is a very resource-intensive activity. And the third one is that if you extend the license renewal there must be some means of ensuring continued public involvement in the licensing process. Those are the themes that sort of continued in the three years that I mentioned on the Convention on Nuclear Safety.

So the task I was asked to do by CNSC staff was to look at options for PSR frequency and the impact on operating license renewal and then make a recommendation.

Staff gave me essentially three models -- four models to look at and I added one of my own. They are

numbered Model 0, 1a, 1b, 2 and 3. Model 0 is a five year license renewal frequency, as is done now, and a five-year PSR; Model 1a is a 40 year license renewal frequency and a 40 year PSR, sort of, not quite -- one can dismiss that fairly quickly. It is not a PSR if you do it in 40 years; Model 1b was closer to the international practice of a 40 year license renewal frequency and a 10 year PSR; and Model 2 is 10 and 10; and then I added one myself because this constitutes the majority of international practice. It is similar, not identical, to Model 1b, which is lifetime license and a 10 year PSR.

So how do you assess those? It's not very useful just to give an opinion, so I tried to develop a set of evaluation criteria which are qualitative. I mean they are a way of just formulating your best judgment. There is no magical formula that will enable you to put these options into a crank and say this is the best one. So it is a means of putting judgment against a set of evaluation criteria. From that you can derive an evaluation matrix. The full report which you all have, of which this is a summary, gives a more detailed discussion then I will do in the next 10 minutes.

I did some informal interviews with people at the stations and also with CNSC staff, not to ask them their view on whether my recommendation is right or not,

but simply to do a sanity check on some of the things I was saying. But they did not affect the conclusions. They did provide me with some useful background information. And then finally I made a recommendation.

So these were the evaluation criteria I selected as a good means of sort of structuring the basis for the recommendation. The number one is which is best -- how best to maintain and improve reactor safety. That's the sort of first goal among many, but it is the first goal. One wants to use a process which is most effective at maintaining and improving reactor safety.

The second one is consistency with international practice. This is not to say that Canada should be blindly consistent with international practice. It is the other way around. If there is no argument on the other side, then why should one not be consistent with international practice, particularly since the CNSC has been moving fairly strongly towards international norms over the past decade?

Technology neutrality. Well, this ended up being somewhat of a nonissue. The time period should not relate to the design of the reactor. So, for example, one should not really tie a PSR to something that is happening in the machine itself.

Public information and involvement. I

already mentioned that if one extends the licence period one has to deal with effective public information and involvement. And the last one was, where is the best place to put resources? How do you balance those two activities so you are putting the resources in the most effective means? So I will discuss each of those on one slide in a little bit of detail.

The practice in Canada, as I understand it, is the first time you get an operating license. It's the result of an extremely thorough, detailed review from the ground up. Subsequent renewals are more -- I don't mean this in a dismissive manner, but they are more of a progress report and if you look at the applications for recent license renewals they tend to cover things like how has the station been performing, what has been achieved, what improvement initiatives have been undertaken, the safety cases updated, reflecting new knowledge, changes perhaps to design or operation, changes to what's happening in the rest of the world.

But what it does not include is a broad overview of the plant design and operation against evolving international safety standards, which is where PSR comes in of course. PSRs complement that, and if you look again at open literature they have led to significant changes to plant safety design. In that sense, once you have a mature

plant, the one that has been licensed, they are more effective than license renewal in maintaining and improving safety.

International practice, almost all plants outside of Canada and the U.S. in fact have what's called a lifetime license. Almost every plant has a decennial PSR. A decennial PSR is also recommended by the IAEA in the document that Mr. Howden referred to, and also by WENRA, the Western European Nuclear Regulators Association in their safety metrics. So international practice has by a large converged on lifetime or very long license and a decennial PSR. I am not going to read the table to you. It would take too long.

This is a survey done by NEA a couple of years ago. The asterisks just mean that I have updated it in a couple of places so that it's NEA plus my own updates. If you look very quickly down the licence period, most countries are lifetime or forty-year license or in some cases 30 years. I think one is 10, and PSR almost without exception, is every 10 years except where it's not required. So those countries that do a PSR do it every 10 years.

I will spend a minute on the U.S. approach because it is interesting. The operating license in the U.S. is valid for 40 years and that period was chosen -- it

had nothing to do with the reactor design. It was chosen based on economic criteria which is trying to amortize the investment and some antitrust considerations which I much confess I don't fully understand, but it was not a technical issue at all.

The U.S. regulations allow renewals after the 40 years of 20 years of peace and you can keep doing that, there is no limit to the number of renewals you can ask for, so 40+20+20. And I think the NRC is looking at coming up to the request for an 80 year operation within the next few years, if not sooner.

So then how do you cover aging? The U.S. has a very comprehensive aging management process called an IPA, which I'm not going to get into detail, but the document governing it is hundreds of pages, so they recognize that they have to have a mechanism more than once in 40 years to cover aging with the plant and they call that an IPA.

So far they have not done a PSR. The IAEA has recommended that they do PSRs and the U.S. NRC has responded that their existing mechanisms are -- effectively do a PSR, even if it's not called that. I believe the issue is still open and U.S. NRC has undertaken to look again at whether they should be doing PSRs.

So a snapshot on international practices,

everybody who does a PSR does it every 10 years; license renewals generally speaking are 40 years or indefinite.

Technology neutrality, this ended up being a nonissue, I think. Both license renewal and PSR processes are inherently technology neutral and there is nothing unique about Canada or CANDU for that matter that would require a customized approach to either license renewal or PSR frequency.

This one I had done some thinking about, I am not a public involvement expert, but the Nuclear Safety and Control Act does set public information as an objective of the Commission, as of course you know. So when you put in a PSR and change the license renewal frequency somehow you must have mechanisms for allowing public information and involvement. This is not something I am in a position to provide advice on to the Commission, but there are obvious possible mechanisms to do that.

For example, when the station annual reports are presented that gives an annual opportunity to expose what's happening at the station to the public. The PSR itself and the CNSC review of the same is another opportunity for a fairly in-depth examination of station performance and of course there are ad hoc meetings and hearings that take place all the time, such as today.

Effective use of resources. Actual hard

numbers are rather hard to get from open literature. Informal feedback from operators are that the resources for license renewal are significant, but not unmanageable. However, they felt -- again informally, and these are not official opinions -- that they would get more safety value from their own internal processes, such as OPEX and ISR, or PSR in this case, then they actually get from license renewal. So in terms of safety bang for the buck, that's coming from basically Black Swan events such as Fukushima and their own processes on OPEX and their own internal reviews.

Regulatory effort from the CNSC, the elapsed calendar time is something like 1.5 to 2 years from preparing and getting to the point of getting to the license renewal. That's calendar time, not people years. PSR -- the IAEA has some numbers on PSR, some 13 -- 50 to 150 people years of preparation. The changes can be very expensive or not, depending on the actual plant. In fact, where one has to make changes my guess is the money on changes dwarfs the actual resources in preparing the PSR.

Lifecycle typically up to nine years elapsed time, which speaks to one of the options I was asked to look at.

So here is the evaluation matrix. So each model on the left-hand column, I think -- does my mouse

show up if I do that? Yes.

So these are the models. This is the license renewal frequency. This is the PSR frequency and then a very brief plus minus or zero where plus means the strength of the model, zero is neutral and minus is a weakness.

I'm not going to go through each one of these because it's going to take too long and it's in the report. I will maybe speak to just some very quick ones just where it is not obvious.

This one, I think, the 40 plus 40 one can dismiss almost immediately because on the face of it you only look at the plant once in 40 years that’s not very useful, so that pretty much drops off on this item here. What you would do in fact is you would have to compensate it by some other mechanism and if the other mechanism ends up doing much of the same things as a PSR, then you might as well do a PSR.

Five and five drops off also fairly quickly because not only is it inconsistent, it's probably very, very difficult to do. You would be starting one PSR before you finish the other one. Typical lifetime or life cycle of PSR, they can be up to nine years, but they can be over five years, so you would be having to overlap if you had to deliver a PSR every five years. But those fall off,

I think, pretty quickly.

1b is the international approach. It does hit most of the right buttons. It is the PSR will take care of maintaining and improving safety. It is consistent with international practice. It's technologically neutral. If you put in the right mechanisms it can provide public information and involvement and is a pretty effective use of resources.

10 and 10, in my view, is the safety category. It is a lot more burdensome I believe on industry because of the 10 year license renewal without a lot of payback from the license renewal itself. You get the payback from the PSR, and it is inconsistent with international practice. There is more detail in the report on this matrix.

So based on that matrix, within the scope I was given, which is these four, my recommendation was for a decennial PSR and a 40 year license renewal, which is close to but not the same as international practice. I proposed a variation, which I called model three, which is a decennial PSR and a lifetime license. Practically speaking there is not a lot of difference between these two, but there is an arbitrariness in this 40 year which I guess makes it difficult to really justify.

And for consideration by the Commission --

this is on implementation. I have not explored this in depth, but I did want to just raise these things as it would be part of the Commission decision making. You can implement this many different ways. You can put it as a license amendment. You can do it as a license condition or amend the Act itself.

I would emphasize that none of these models changes the ability of the CNSC to amend, cancel, revise a license at any time. They do not limit the ability of the CNSC to withdraw, amend; revise a license. So they have no implication on CNSC's existing capabilities.

What has changed in Canada since I started my career was the CNSC now has much more ability for graded control than it had when I started, where the only thing that you could do was basically de-rate the plant or limit a license period. What you have now is things like a License Condition Handbook and monetary penalties that gives the CNSC very fine control over the entire process.

And what I have not addressed at all in my report is how you get from A to B, so how do you go from what we have now, which is a five year license to what my recommendation is, which is an indefinite or 40 year license. I have not addressed how you would do interim steps in that process and the Commission may want to

consider that as well.

Thank you.

THE PRESIDENT: Thank you very much.

I see the industry representative here came forward. I assume that means you want to say something.

MR. MANLEY: Yes, please. This is Robin Manley. For the record, I am the Director of Nuclear Regulatory Affairs and Stakeholder Relations that Ontario Power Generation.

First off, I would like to say that the industry appreciates the efforts made by the CNSC to go through a process of consultation and give us the opportunity to comment along the way and to disposition the comments that we provided.

Speaking for OPG, we have no significant issues with the regulatory document on the periodic safety review or the process described and we can comply with it. However, we are puzzled why the CNSC staff have chosen to recommend a firm period of 10 years as the license term, tying that to the PSR. Understanding the PSR term of 10 years consistent with international practice, but not so clear on limiting the license to a 10 year duration.

Again, speaking for OPG, and specifically our upcoming Darlington license renewal, we have in place

all of the requirements that are necessary to comply with the REGDOC-2.3.3. We invested heavily to lay the groundwork for a long license. So, for example, as noted, we have performed the Integrated Safety Review, the ISR. We did the Global Assessment Report, the GAR. We have in place the Integrated Improvement Plan, the IIP, as well as the Return to Service Plan. We did a full environmental assessment. Our integrated safety review looked out 30 years, as has been referenced earlier.

And so we have all the necessary materials, plans, processes in place to enable a much longer license than in fact the 13 years that we are requesting. And, as is noted by Dr. Snell, in other jurisdictions typically we would be looking at a much longer license, like a 30 year or indefinite license term. The CNSC's external contractor recommended two options, either a 40 year license or a lifetime license with a periodic safety review every 10 years. We agree that that's a sensible recommendation and aligned with international practices.

We agree with the expert statement that CNSC continues to have all of the necessary controls in place to ensure nuclear safety regardless of the license duration which could be determined individually, depending on the operational situation around any particular plant.

In addition, OPG is open to opportunities for future -- sorry, for further public engagement, for example in commission meetings that review nuclear power plant performance such as the annual report meetings.

With that I will end my remarks, but I'm open to questions, if you have any. Thank you.

THE PRESIDENT: Thank you. Anybody else?

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

I did just want to say that Bruce Power supports the PSR REGDOC itself and we don't have any further comments on it. I actually haven't had a chance to say that in the past so I wanted to make sure I got it in.

In general we support OPG's comments. I think there is an opportunity here as we introduce the PSR process, assuming the Commission agrees with it, to just re-examine a little bit how we do the license renewals and the administrative effort that goes with it so we can focus more clearly on safety and less on the administrative burden. So my thought would be that we ought to take a little time and think about that part of it, as well as the PSR process itself.

I think, yes, the Commission has lots of power and certainly could restructure the hearing so that it has a licensing ability during those hearings and

involves the public at the same time, but perhaps takes out some of the duplication that exists on the current license renewals. So I would just encourage the Commission and staff to think about that structure as well as the PSR process.

THE PRESIDENT: Thank you.

MR. NOUWENS: Jason Nouwens, for the record.

I just want to echo the comments made by Robin and Frank that we do support the PSR recommendation, but agree with the comments made that the 10 year fixed license period should be considered in the future.

THE PRESIDENT: Okay. Let's get into the questions.

Let me start with Ms Velshi.

MEMBER VELSHI: Thank you, Mr. President.

So I, too, want to commend the staff for this document, as well as for taking the opportunity to review the whole licensing period as you looked at PSR.

So why don't I start off by asking you to comment on what you have heard from the licensees on why you have not followed up with your consultant's recommendation around licensing period.

MR. HOWDEN: Barclay Howden speaking.

So one of the recommendations is that we

adopt PSR. So we have agreed with that, but a lot of the discussion is around the license period. So from a staff perspective we are trying to take what I call an evolutionary approach to regulatory continuous improvement and I have three points to support that.

From license renewal our stakeholders place a lot of weight in participating in the regulatory decision making process and this occurs around renewals and amendments. We do have the NPP annual report. It is a key reporting tool, but regulatory decisions are rarely taken around that and in that forum.

So it is an important forum for stakeholders, but it does not carry the same weight in influencing regulatory decisions, or maybe the perception of influencing regulatory decisions.

The second is from an evolutionary perspective. So we have moved from two to five years and that has taken about 10 years for us to sort of move from that. If we were adopting PSRs and considering the resource load, we thought that promoting 10 years would get some efficiencies in terms of between the license renewal and the PSR work, so the attention was to try to avoid duplication of effort if they were out of sync with each other.

The third one is it leverages our license

standardization that we have been doing. So if you look at our license now -- very crisp, clean license -- we could add two license conditions, one for requiring a PSR and one for implementing an IIP once it was done. And we have the LCH, the License Condition Handbooks, which is really the tool to outline the scope and timelines for the IIP.

So that has been actually a regulatory improvement unto itself so we would be leveraging this tool that is really starting to mature now. So from our perspective we can always be flexible. We work for you folks, but you would need to be satisfied that the mandate would be executed from the nuclear safety perspective and I have no doubt about that. But there is a transparency in participation of the public part of what you do and from our perspective we thought that moving to 10 and 10 at this time would be appropriate and that's the reasons for why we wanted to align those two.

MEMBER VELSHI: So, you know, I hear the caution in your voice. We are not closing any doors. It is -- hey, it's evolutionary. Let's go through the first cycle, perhaps more and then see, especially -- and I am particularly in tune with you when it comes to the public engagement and are we compromising that in any way.

Were you surprised to hear that the licensees don't see a whole lot of value in the licensing

process as far as safety impact?

MR. HOWDEN: Barclay Howden speaking.

Not entirely, because what they see is if they are committing to PSR's they are going to be doing a lot of work on really looking at improving safety, but the PSR is looking at those improvements, which can include physical improvements or programmatic improvements as well. Still, what the license renewal does is it really makes us look at all the programs at the same time.

So not totally surprised, but at the same time we felt that we could package the two together and I think I used the word seamlessly. The devil is in the details of course, to try to combine where the PSR requires programmatic reviews where they are looking at interdependencies to combine that at the time when they would be maybe revisiting their programs at that time. So not entirely surprised at that.

MEMBER VELSHI: And as I looked at the scope of the PSRs and compared it with the other areas, there were things like waste and security for instance that are not covered by PSR; is that correct? If so, why is that?

MS SIMIC: Sanja Simic, for the record.

SSG-25 gives the option that security does not be covered in a PSR due to sensitivity of the matter.

However, the option is flexible. It's really up to the regulator and the licensee to determine whether security should be included. We decided to exclude it at this point and security, however, will be reviewed as part of the license renewal process, because in addition to the PSR, as we recommended, there will be a license renewal process as well that will be looking at past performance and also like a variety of programmatic elements.

MEMBER VELSHI: There was more than security. I think I didn't see waste. I didn't see security. I didn't see transportation.

MS SIMIC: Sanja Simic, for the record.

That's correct. Because let me make it clear that the purpose of a PSR is to look into the safety, into the radiological safety coming out of a nuclear power plant, not to look at the wide spectrum of a regulator’s activity. So like areas like conventional health and safety internationally are not included typically in the scope of a PSR.

MEMBER VELSHI: I think that's just point number four for you, Mr. Howden on, you know, it complements the PSR process. Have you had a peer review of the regulatory document by the IAEA or other regulators?

MR. HOWDEN: No, we haven't. However, when Point Lepreau went about producing its integrated

safety review for preparation for the refurbishment of their plant, one thing we did do was we went back to the IAEA to say, “So they want to do this and they are making some good proposals. We want to formalize the regulatory process to make it very structured and systematic and the thing that we would compare it to would be the periodic safety review process that the IAEA had put out” and they came back with an opinion that that looked very good.

So what we have done is taken the ISR process and basically morphed it into something that you would do every 10 years. So the answer; no, we did not ask for a peer review on this, but we have a high level of confidence that this is meeting international benchmark standards at this point in time.

MEMBER VELSHI: Okay. And my last question for this round. When it comes to transparency and public engagement do you see the Global Assessment Report and the improvement plan being made public?

MR. HOWDEN: Yes, for sure. So the first three steps of the periodic safety review process, CNSC staff is reviewing and accepting that. But when it comes to you, after the Global Assessment Report is done, the Integrated Implementation Plan is being presented to the Commission, that is a completely public document and allows people to see what the plan is and what the basis that has

been made out. So there is a lot of transparency with that.

MEMBER VELSHI: Thank you.

THE PRESIDENT: Thank you.

Dr. McEwan...?

MEMBER McEWAN: Thank you, Mr. President.

So if you look at international experience, because we have looked at this a lot, you have a number of issues that are addressed in our license renewal that are not in a PSR. So how would issues of safety and security and waste handling be looked out at on a regular basis by other jurisdictions to ensure that there was no broad change in safety associated with those?

MR. HOWDEN: Barclay Howden speaking.

So, as we said, PSR would be complementary to our existing way we do business. So what we are doing today in terms of assuring that the programs in place are put in place; they are inspected, we continue to do that, so that -- am I missing --

MEMBER McEWAN: That wasn't my question.

MR. HOWDEN: Okay.

MEMBER MvEWAN: My question was how do other jurisdictions do it?

THE PRESIDENT: And just to -- let me throw an understanding here. A lot of the jurisdictions

don't have the mandate in security. In other words, we are one of the very few regulators that looks at both security and safety kind of together, so for the Europeans to get a deal they have to exclude security out of this. In the States, you know what security is like in the States.

So there are all kinds of differences in the regulatory mandate that I'm just wondering about whether that is a factor of what's in the original PSR à la IAEA.

Dr. Snell, you look like you want to reply to that.

DR. SNELL: I'm going to give you a partial reply.

I think the philosophy is that the PSR doesn't suddenly remove all aspects of regulation. The regulator still has the tools it always has, which is audits, inspections, programs. So it's a layer, not so much on top of regulatory licensing; it's a way of catching stuff that you might have missed in sort of routine day-to-day licensing. It's to try and step back and say what has been happening over the last 10 years that you wouldn't normally capture in your regulatory processes.

So it's somewhat -- it's not intended as a replacement for the everyday regulator activities. It's a supplement to it. That's different from saying you should

just open the license every five years or every 10 years. And by the way, I think --

THE PRESIDENT: But in a lifetime license or in a 40 year lifetime, when do you do that?

DR. SNELL: Yes.

THE PRESIDENT: When do you talk about security and the inspection and all of that stuff?

DR. SNELL: So I will have to speak from my somewhat limited experience. I know in the U.K. the security aspect is actually integrated with the regulators, they have both, and so it's not difficult for them to integrate the two.

So unfortunately I don't have an answer for every single jurisdiction.

THE PRESIDENT: Thank you.

MR. HOWDEN: Dr. Binder, but I would like to comment on Dr. McEwan's -- his question.

In terms of the other jurisdictions, as Dr. Snell says, some are combined, but you are correct, some are separate which provides some challenges. But in each case the regulators that we are familiar with, so the French, the British, the Koreans, they have established mature regulatory agencies that handle the waste, the conventional safety as part of their routine way of doing business.

How do we know that? Because the international community IAEA does international Integrated Regulatory Review Service missions, which I had mentioned, IRRS, and they are all measured against the same set of standards that the IAEA has, so we had one in 2009 with a follow-up in 2011. What came out of that is, if you look at their reports they weren't getting too many different recommendations and suggestions than Canada is getting today, so we know that they are quite aligned with the way we do business.

Also, we have had Canadians participate in those missions so they have come back and say, “Yes, these folks are following the international standards so they are doing the regular inspections and the regular oversight”.

So we do have information from those activities that we participate in.

MEMBER McEWAN: So I guess this is a little bit of a follow-on to that just to help me understand. The License Condition Handbook could be changed as a result of a PSR?

MR. HOWDEN: Yes, that's correct. So the expectation would be if the Commission adopted PSR and you -- let’s say a licensee went through one and now has produce their integrated implementation plan -- okay, so two things. If you required the PSR that would be in a

license condition and then within the License Condition Handbook under the compliance verification criteria, this REGDOC would be referenced, so that would be the standard against which CNSC would be measuring whether the licensee met that requirement.

The second one is, once they have completed the PSR and now they have gone to some sort of hearing where the Commission has reviewed the integrated implementation plans, has agreed with it or adjusted it and said, “Okay, go forth. You have given us this scope and timelines with milestones, so we will have a license condition that says you shall implement the integrated implementation plan”, the IIP would then be referenced in the License Conditions Handbook with all the milestones against which we would be measuring them.

We would then use that to report back to you on a regular basis. You know a yearly NPP report is how things are going. If they were going off track for some reason, we have the mechanisms to request the Commission to hold a meeting to bring the licensee forward and say “We hear things aren't going as well. Can you explain it to us?” But we would be using the IIP as we go along.

Now, as they go along, if they learn a few lessons as they go through and need to adjust it, those

adjustments would occur in the License Conditions Handbook.

MEMBER McEWAN: Okay. So maybe I could ask industry for a last question in this round.

I think we have seen several times in these documents, it is 50 to 150 person-years to produce a PSR. How many person-years to produce an annual report and how many person-years to redo a license and when does that cumulatively become non-sustainable?

MR. MANLEY: Robin Manley, for the record.

I would say that industries' preparation for the annual report meeting is the smallest of the three. I have never actually measured it, but it is less than one person year of effort to prepare for an annual report meeting currently. License renewal is more on the order of, I guess I would say, sort of several person-years worth of effort. Again, I don't know that I have actually added to all up. Frank might want to expand on that.

And certainly the integrated safety reviews that we have done were by far the bigger efforts and, I guess, I would say by far produced the more significant actual changes in the plant.

MR. GUGLIELMI: Yes. I think it's a little hard to compare exactly because it depends on what you include in license renewal and for license renewals we do a lot of studies and analysis as well. A lot of PSA

work we have done recently has really been focused on license renewals as well as Fukushima and other things.

If you add that all up, I'm not sure how much difference there is, but you're certainly talking for both of these things a few million dollars, right. So it's not a trivial amount, and it can be more if you get into more in-depth analysis on particular issues.

So I think the -- but we're going to do that work anyway to manage the plant and make sure that we have a sustainable business plan going forward, so we're really not concerned about the technical work because it's work we need to do. Whether we do it for you or do it for us, it's really neither here nor there.

The issue, really, is more around are we doing a bunch of overhead work, administrative work that doesn't add a lot of value. And I would think, you know, looking over the last several years, certainly the licence renewals have become increasingly difficult in terms of the administrative overhead to deal with.

We've also seen a large increase in the public interest and public awareness, or at least in some groups, at any rate. I think as we go forward

we'll likely see nuclear power as a bigger focus in terms of energy and, therefore, we'll likely draw even more attention looking at new designs and various things.

And so my thought would be that we just have a good opportunity here now to sit down and do a review, right, and say if we were starting again rather than just kind of building it as we go and we wanted to make sure we got a good review of programs on an ongoing basis -- I mean, we do it through inspections and so forth, but every once in a while, maybe the Commission wants a good summary. You know, we do it internally on a three to five-year cycle, so every program gets a look every three to five years, depending on its relative importance.

Maybe there's a way we can structure Commission hearings and reviews so they focus on certain issues in terms of program performance, we focus on public participation in a different way than we do so they know what participation and what it is they're commenting on and we get less of the kind of general rhetoric about whether Canada should have a nuclear program or not and more specific stuff about the operation and, at the same time, kind of reduce the overhead involved in doing a kind of comprehensive

review of every program every five years.

I mean, that is -- it is a burdensome thing just to write all that down in a format that you can discuss in an understandable way with the public.

It's easy to do it in a really technical way. We do that all the time. It is harder when you try to write it so that people can understand it and get a study out of it.

So I just think there's a perfect opportunity here to look at this question, to think about how we might like to do it going forward.

I wouldn't suggest you delay the PSR while you do that. I think PSR is well worth doing and move forward with it. But I'm just saying maybe it's time for a little bit of a study around how we do this in Canada, and maybe there's some better answers.

There's certainly a lot of different ways of doing it, and maybe there's some better answers that would be more administratively comfortable.

THE PRESIDENT: Monsieur Harvey?

MEMBER HARVEY: Merci, monsieur le président.

My question is -- goes to Dr. Snell. In page 16 in your matrix there, I just want to

know -- it's very scientific here and I suppose you have -- in the original matrix you would have been more specific than that. But I want to know the -- what weight has been put on each column there because it appears to me that there are -- it's not the same -- they are not all the same importance, at least.

Like for example, consistency with international practice, at the moment all our standards are inconsistent with -- I don't see to be consistent with the licence renewal when PSR is so important compared to the improved safety and information involvement, for example.

If you put the weight on any information could be quite different, and that's if you do it on any involvement.

I don't know -- so I don't know in France. I'm not familiar what is done in UK and States, but depending of the importance you put on each column, the recommendation, the answer could be different.

DR. SNELL: Victor Snell, for the record.

Yes, I agree. It's not a mathematical formula, but when I evaluated the matrix, the most

important one was maintaining and improving safety, so that -- if you don't pass that, it's out. And that's why one of them just disappeared immediately.

The one that I spent some time concerned about was public information and involvement because of the CNSC mandate, and I made some suggestions as to how that could be accommodated. But again, one of them was, on the surface, a non-starter.

And the other one was effective use of resources because when you take resources in one activity and put it onto another activity that is less effective in terms of safety, then that's not a good thing to do. So since resource is limited, you want to put your resources in a part where they give the most benefit for safety. So that was another one that I considered quite important, actually, because we have limited resources.

Technology neutrality ended up, as I say, being somewhat of a non-issue.

Consistent with international practice, I gave it some weight because Canada has made an effort to be consistent, where appropriate, with international practice. And I didn't find any reasons here why we should not be consistent. There's nothing special about Canada in this particular

aspect.

We have a lot of things which are unique in Canada and have very good reasons for them, but in this line, I didn't feel there was anything that was driving us to be different for the sake of being different.

THE PRESIDENT: But consistency with international practice --

DR. SNELL: Yeah.

THE PRESIDENT: -- the one is PSR. I think the staff is recommending PSR.

What the inconsistency you're talking about is the 10-year licence, which is a whole different issue. So it's not really -- it's a half a minus here because --

DR. SNELL: Well, my recommendation was for complete consistency, which is --

THE PRESIDENT: Okay. Well, I didn't get that complete consistency here. There was some consistency.

The purpose of this presentation today is to get the PSR. The linkage with the licence is yet another decision which is -- can be done elsewhere, separately. And as you are aware from industry, it's not dependent on the decision to do a

PSR.

Monsieur Harvey?

MEMBER HARVEY: I'd like to hear the staff about that. What analysis have you done of that matrix and the -- what is your point of view on that?

MR. HOWDEN: Well, I don't think we've done very much analysis. We've been relying on Dr. Snell to look at and give his opinion, and it's a very learned opinion.

I think from our perspective, we still have taken, I think, a guarded approach to be evolutionary as opposed to revolutionary.

I think -- like when you come down to the last one where you're looking at the resources, there hasn't been a detailed review of the resources to do the comparison, so -- but we do see benefits in integrating this into the licensing regime and the way we do business because it's a natural fit.

We also see that the 10 years is a good period interval for periodic safety review because of the reasons we outline and, also, there's a life cycle of maybe up to nine years.

So shorter is not better, but again, back to the resources, we haven't fully looked at that.

We were looking at the improvements to nuclear safety, so we put a lot of weight on that, which is very important.

But one thing licence renewal gives is it does a little bit of a backward view to look at performance, and that is an important thing to us in terms of performance because it is, to a certain extent, a measure going forward. So we still find quite a bit of value of that.

If we could figure out how to do that in another way, we would be very happy to do that, but I'd say we haven't done a detailed analysis of what Dr. Snell has presented in terms of his pluses and minuses.

MEMBER HARVEY: What about the public participation and the opportunity for the public to intervene?

MR. HOWDEN: So that's always been very important within the CNSC and the Commission, and I think, internationally, we get a lot of kudos that it's something that we do well and others aspire to. But we've had a lot of interaction with intervenors and, you know, there are challenges with them as raised by the licensees but, at the same time, we do know that they do want to have influence in some way

on the regulatory decision-making process.

So right now, the tool for them is licence renewal, so that puts a lot of weight on that in terms of their participation in our regulatory process.

MEMBER HARVEY: Merci.

THE PRESIDENT: Mr. Tolgyesi.

MEMBER TOLGYESI: Merci, monsieur le président.

You know, according to comments which we will see during the hearings, okay, for the general public operating licence period is the most effective enforcement. That's why they are asking that licence should be given for two years or five years or so long or shorter.

Considering the licence extension to 10 years, therefore, it will be seen as less public involvement. I think that will be the perception of the public.

It will be probably on the CNSC and the industry to demonstrate that other enforcement methods -- we were talking about including financial penalties -- are as effective.

How we will handle that?

MR. HOWDEN: Could you repeat the last

part of the question?

MEMBER TOLGYESI: That considering that it will be perceived by the public as less public involvement because there will be 10 years' licensing period -- now it's five every licensing hearing, public is involved, so it will be perceived as less public involvement, how the CNSC and industry will make sure that there are -- to demonstrate that enforcement methods now that we add the financial penalties are in place that -- to demonstrate to the public that there is a public involvement and they are involved, and when -- and how they will be involved.

MR. HOWDEN: So in terms of enforcement, so the public may see licence renewal as an enforcement tool. It's generally not intended as an enforcement tool. It's intended to be an opportunity for people to get involved in licensing and for the Commission to hear applications. So -- but there may be a perception from the public.

From our perspective, when we look at our regulatory toolbox, we look at things like 12(1) requests, so that was what CNSC issued to Cameco. You discussed that event earlier.

We have Orders. Administrative Monetary Penalties is new into the toolbox and is

getting used a fair amount. Not in the NPP world at this point.

We also have prosecution, which we don't pursue too often. But we also have change of licence conditions or amendments to licences which is done by the Commission.

The public may see that that might be the tool that they would want to see used if they went to beyond five years, but I think that would only be used if you were in a case where a licensee had a licence and, for some reason, they would need to change the licensing basis because as long as they operate within the licensing basis, there's no need to do licence amendments or changes.

So one thing that we've tried to do is the NPP report has been very performance-based, looking at how did the last year go. We're beefing that up to start looking towards the future in terms of regulatory things that are coming down.

So we would -- in our view, we would expand it to say licensees that are implementing PSRs through their integrated implementation plans, we would read the reporting on that. Or if they were performing a PSR to get to that point, we would say, okay, the basis document has been reviewed, staff has

accepted it. The licensee has now gone on to the safety factors, and we would bring -- you know, we'd be very transparent in the way that would be.

As I said, if a licensee started running into problems, we don't have to wait for the annual report to come and report to you. We would bring it back to you. And your expectation is you want to hear about things sooner rather than later, and we would use the tools of other ad hoc reporting to you.

So it may be a perception from the public and it's important to them. I think we have a lot of other tools in place that we could hopefully satisfy their need for transparency and participation.

MEMBER TOLGYESI: And industry, what you will do or how you will persuade the public that, in spite of 10-year licence -- or we were talking about life, here, licence -- how you will manage to make sure that you are operating according to and in spite of -- there are financial penalties that, you know, general public has seen that, okay, it's a financial penalty, so they will pay it and that's it. They should -- they don't have to do anything more.

What you will do?

MR. MANLEY: Robin Manley, for the

record.

So first off, I'd say that industry has been more and more open in terms of public engagement in the last while and we're continuing to expand upon that.

You can see that in the licensing process that we're undergoing right now, and there's no intrinsic reason why that can't be an ongoing process.

So for example, we have our community advisory councils which are open to the public, and they have an opportunity to come and ask us questions at all of those meetings.

Likewise, it's -- Mr. Howden has already commented on the fact how, at the annual reports, there will be more material forward looking, that the PSR process will result in aspects of the IIPs being built into that.

Not to say that -- you know, necessarily saying the Commission should do this, but there -- I don't think there's anything stopping you from inviting intervenors to participate via oral presentations as well as written presentations at the annual report. That's well within your powers to do that should you choose to.

And those annual report meetings could be longer and more detailed if that's what you needed to do in order to satisfy your mandate for public engagement.

But from our end, we're meeting with our local stakeholders more frequently and we're hoping to continue to expand upon that.

THE PRESIDENT: You know, I've been sitting and listening, you know, patiently to some of this stuff. If I were you -- something doesn't compute here, okay.

If I were you, after spending nine years doing a PSR and coming to the Commission and looking at some of the PSR factors, many of them overlap with our safety and control area -- which, by the way, you may have to do something about the safety and control area review, how they relate to the factors. I would want to get my licence renewal right there and then because if there is a lifetime licence, we can advise you every time there's an issue comes up rather than once a year you come with this enormous PSR which deal with all the safety issues. You may have to piggyback the -- yes, the security and the transportation and the waste which we will ask for information on an annual basis.

Why wouldn't you want to put them all in once in front of us is beyond my comprehension, and you haven't given me a good answer about this, what is this incremental over and above PSR that you will require this amount of work to do to get a licence renewal at the same time.

So the way I see it, PSR gives you 95 percent of the work. You need to do another five percent to get the licence extended and you're good for 10 years. What am I missing?

Somebody, please.

So the European, if they do a lifetime, I just don't believe any of this. If you listen to Werner and some of those guys, they're talking about continuous improvement between PSRs. And to me, that means more reports and more information on this continuous improvement plan that they're now asking for.

So something doesn't compute in my mind.

So who wants to -- I see somebody coming up with the answer to that.

MS SWAMI: Laurie Swami, for the record. I'm the Senior Vice-President of Decommissioning and Nuclear Waste Management for OPG.

I listened to the conversation with respect to resources, and I would just say that, for instance, in our Darlington renewal, I think we've spent in the order of 20 to 30 million on a PSR.

We also have a team of five people right now who have been working on licence renewal for in the order of two to three years, so I just want to give you the perspective of what the resource loading would be.

THE PRESIDENT: Well, if you -- so you're telling me now that you're doing PSR and you don't see the efficiency of doing it together? Is that what you're trying to say?

MS SWAMI: Laurie Swami, for the record.

I think what I'm trying to say is that we have done a lot of work. We've put a large investment into the PSR-ISR process, and we would like to see that we get some efficiency out of that as an implementation strategy for improving the regulatory process.

THE PRESIDENT: I think so is staff. I mean, they also care about efficiency, and I thought that by putting this improvement plan and for the next cycle, we'll give you an improvement plan well defined

according to PSR and then, from then on, you're just doing the monitoring of performance.

So anybody? Staff, you want to say something about that?

MS SWAMI: Laurie Swami, for the record.

I guess I was listening to your comments, Dr. Binder, and you were talking about coming back every year and providing a significant amount of information. And I understand that's the process that we will have in place going forward.

It's not something new or different with the implementation of a longer licence period.

I also have in my scope of work 10-year licences today on our waste facilities and, as part of that process, I come forward with a mid-term review in about five years into each licence. So there is a process that you have in place that you've already adopted for looking at things more closely and giving an opportunity to do a more detailed review at the same time.

So there are many ways that you could implement oversight beyond what is already existing in the licensing framework.

THE PRESIDENT: Okay. Maybe I'm not

articulating my concern here.

We're talking about a new process in which there will be a PSR every 10 years, so -- and if it ties in with the 10-year licence renewal, then staff annual reports then become performance -- it's staff annual report talking about how you're doing against the PSR implementation plan and, you know -- and maybe some incremental things that PSR doesn't deal with like security.

So I thought that would be an easier -- easy -- easier process to manage from your side and from staff.

MS SWAMI: Laurie Swami, for the record.

Maybe we're violently agreeing?

MR. SAUNDERS: Frank Saunders, for the record.

I think the issue is what will that process look like. What's in the licence renewal, what's in the annual reports? I think it's just a question of we're going to change a bit. We should ask a few of those questions and say what are we going to do each year, what are we going to do at the 10-year period and how's the public involved and what's the load on doing it.

So I -- you know, I like what you're saying about the ISR and the follow-up. I'd be happy to accept that proposal. But I'd like to see us kind of work it out and make sure we cover the bases rather than get surprised that we've missed something and then add it all back in again kind of accidentally, right.

THE PRESIDENT: I think staff wanted to say something.

MR. HOWDEN: Yes, Dr. Binder. Thank you.

I just want to reiterate what we had said before in terms of -- and as you said, this meeting is to talk about PSR.

Of course, once -- if the Commission adopts it, then everyone says, "So how are going to implement it?"

And again, evolutionary -- if we're going to do something evolutionary, aligning the licence period makes sense to us.

NPP annual report -- so from a staff perspective, the licensees have to submit all their information regularly because it's part of what they do under the licence. What we've done is we've put in a lot of automation for ourselves in terms of

compiling information and giving you the performance story.

Adding things like PSR, we do see it as an incremental thing and we're adding it to the existing report. We're not breaking the report down and starting from scratch. We're looking at adding to the report in terms of additional information.

So we're not seeing it, for us, doubling the effort for our NPP annual report. We see it as an incremental measure so, for us, that's an efficiency for us, for sure.

THE PRESIDENT: Okay. I interrupted you, Mr. Tolgyesi.

MEMBER TOLGYESI: Merci, monsieur le président.

You know, on page 15 of the staff, you could see the difference between the scope of ISR and PSR, okay. ISR is more extended.

According to Mr. Snell, the PSR takes maybe three years the first time and, after, takes two years when it's a renewal.

What's the time to complete an ISR study?

MS SIMIC: Sanja Simic, for the record.

It's the same as the time for the first PSR, which is roughly three years.

MEMBER TOLGYESI: Now, once the Reg Doc 233 approved, will any future refurbishment require an ISR or when pressure tube operating life limit is renewed like we were reviewing for 2010 to 2000 some-odd thousand? So when these ISRs will be required, or will they be required?

MR. HOWDEN: Barclay Howden speaking.

I think the industry will want to comment on this for sure.

Again, ISR has a 30-year view, so it really is used at renewing a station that's coming to -- close to the end of its commercial life to be able to double it, essentially. So I think from that perspective, it has a very long view of the world.

The PSR really only has a 10-year view, so I think a little bit of it comes down to the strategy of what the licensee wants to do.

Most of the stations have gone through an ISR. Not all of them, but most of them. And so the licensees may look at it with a slightly different strategy, but if they're only looking 10 years out, they need to make sure that, in some cases, if they're going to invest, they're actually -- in some cases,

they're actually having a 30-year view of the world.

Like let's say you're going to change all your pressure tubes. You're not changing them for 10 years. You're changing them for 30 years. But you need to be able to say that if we do this, we know that for the next 10 years that those -- the fitness for service of those particular components are going to still be good.

MEMBER TOLGYESI: But when we are talking about revision of operating hours, it's about 7,000 hours a year, so from 2010 to 2014 is about five years that if you do the PSR every 10 years, how you will fit that together?

MR. HOWDEN: So I think it depends on what the age of the tubes are. At this point in time, these are older tubes and so they would have to be able to project out 10 years to be able to do that.

In terms of stations that have undergone refurbishment like Point Lepreau, that's not a concern for them because they still feel they have the 30-year life to go forward.

But again, in order to demonstrate that the next 10 years of operation will be safe and that they can introduce safety improvements because they are looking at modern codes and standards, those

arguments are going to have to be made. But they may have some more specific comments, the folks at the back of the room there.

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

The real difference is in the integrated improvement plan, so an ISR and a PSR would essentially look at the same period. From our point of view, we always look well into the future because we need it for business planning purposes anyway.

The main difference with a PSR is your integrated improvement plan will focus on the next 10 years rather than the next 30, but if you looked on the wall of our place, you'd see we got it all mapped out for the next 30. You're just doing it with more accuracy in the 10 years immediately preceding.

So for example, if -- you know, we're doing a PSR right now on Bruce A. If you looked at that, it will tell you that we'll be replacing the pressure tubes at certain dates, so when we come to you with an IIP, it will say our pressure tube life will be reached at this point and, at that point, we will shut down to replace pressure tubes.

So the integrated improvement plan will tell you that, and that will be in our licence,

and so we will need to do that when we said we were going to do it.

So the IIP lays it out for the next 10 years, so it's not that everything is perfect the minute you do a PSR. It really just says here are the major milestones from a safety point of view that need to be done over the next 10 years.

THE PRESIDENT: Okay. We're late.

Anybody has any burning questions?

MEMBER McEWAN: I have.

THE PRESIDENT: Go ahead, Dr. McEwan.

In the Reg Doc itself on page 1, paragraph -- Section 1.2, there's a statement that is not entirely clear to me, and I'm in the French section.

THE PRESIDENT: Scope.

MEMBER McEWAN: Scope. So thank you.

If I read it, the document is primarily intended for nuclear power plants. However, PSRs may also -- there's a typo there -- may be also performed by other nuclear facilities using a graded approach.

What does that mean?

MR. HOWDEN: So that means that it could be applied to facilities beyond nuclear power

plants. And in doing so, some of these facilities may pose, let's say, a lower risk profile. What graded approach is, is that you do the work that's commensurate with the risks posed, but you do not not meet the regulatory requirements.

So for example -- my colleagues behind here may have some comments.

If you look at another facility and maybe, yes, they want to do a PSR, they look at -- it's maybe a lesser complex facility, so as they go through the safety factor review, they may say, well, some of these areas aren't applicable to us because it's not for the facility or, in this case, because we're a very small operating organization, we only have to do certain things.

So the intent is that it's not just limited to nuclear power plants, but could be phased in with other types of facilities.

MEMBER McEWAN: So it could be applied to SLOWPOKES?

MR. HOWDEN: It could be. It -- if it was, it should be incredibly simple to do because of their simple design. It could be something that you look at and say, "What are the life-limiting components within this facility? What components

important to safety may have issues? Is there a way to find ways to improve safety within the facility to meet modern codes and standards?"

MEMBER McEWAN: So have you discussed this with the SLOWPOKE operators as part of your outreach?

MR. HOWDEN: I do not believe we have. I'll ask -- I think Dave Newland is sitting back behind me who may be able to comment on who we've spoken to outside. We've mainly focused on the NPP community at this point.

But knowing that one of the things we've done in the past is for these lesser lower-risk facilities, we have applied nuclear power plant requirements, but with a graded approach to them. So management system is a perfect example where you've looked at the thing, you don't need the complexity of the management system that you do in a nuclear power plant, but you need to achieve the same goals.

MR. NEWLAND: Dave Newland, for the record.

We have started internal discussions on the role or the possible role of PSRs for other Class 1 facilities. We have had experience with using a PSR-type process for the NRU and, in that context,

it was a very useful exercise to identify needed improvements for such an aging facility.

There are certain benefits to doing a PSR around it being a truly systematic and integrated process that would be of benefit to other Class 1 facilities.

We have looked at practices in the UK where they apply PSRs to a wide range of facilities, including NPPs, some of their reprocessing facilities and other facilities, and so in applying a PSR-type approach to other facilities in a graded way, what we would probably do is look at those safety and control areas that are really specific to that facility and that would be most risk significant.

With respect to outreach in terms of those, we have not done it as yet. These are internal discussions, and what we'll do is learn from the experience with the Commission today and then figure out a path forward.

MEMBER McEWAN: So Mr. President, I think I have a difficulty with the way this is written because if I'm a SLOWPOKE operator -- would this apply to Class 2 facilities as well?

MR. NEWLAND: Dave Newland, for the record.

No, I don't believe that it would.

I'm not sure that it would apply to SLOWPOKEs. I think that there is a cut-off of the complexity of a facility, and I suspect that a SLOWPOKE is below that where there would be no real derived benefit in doing such an integrated assessment.

THE PRESIDENT: But let me understand this. The word "may" is an important issue by design. This is not being imposed on anybody now, but the decision, if the Commission adopts this, it's being imposed on NPPs.

Did I get this right?

MR. HOWDEN: Yeah. So the answer is yes, as long as the Commission would place the requirement in a licence. That would be your tool that you would use, for sure. And the focus right now is the first phase, if adopted by the Commission, would be for the NPPs.

And you can see that was all our examples that we provided to you.

MEMBER McEWAN: I'm still a little uncomfortable with the wording, that it is very flexible to apply to the other areas without further conversation or consultation.

I just think it gives too much flexibility to apply it without going back to consult with them. You've had extensive consultations with the NPPs, and yet, within this, you're saying, by the way, it may also be used, but I think the implication is it may also be required for the other facilities, and you haven't had those consultations.

MR. HOWDEN: So I think -- I think that's a very good point. And so I think, for today's purposes, if the Commission can consider NPPs at this point, and staff will huddle to sort of say, okay, if we were to do it beyond these folks, how would we do it, how would we engage them so that --

THE PRESIDENT: Look, this is not the way it's going to operate. If we decide to require it we have to include it in their operating license and to do that requires consultation and requires them to have the opportunity to be heard. So this cannot be imposed without consultation. That's my comfort level, unless I'm misunderstanding.

Somebody...?

MR. MOSES: Well, it's Colin Moses for the record.

Just to clarify, the regulatory documents do lay out expectations for a specific process, but the

application of those regulatory documents are achieved through a licensing process. So it would be through that that the Commission would decide whether or not to apply that to different facilities other than nuclear power plants.

THE PRESIDENT: And if it so chose to apply it there would be a different process of consultation and hearing and what have you?

MR. MOSES: Absolutely. And you know our regulatory documents are drafted to be flexible and they can be opened and amended from time to time, if you want to adopt a different application or if you have lessons learned in applying that regulatory document. So we do have processes for that.

And maybe the final point, too, is that we did get engagement in the consultation practice from what is now the Canadian Nuclear Laboratories, who specified or recommended inclusion of graded language in the regulatory document just so that if we were to choose to apply it to other facilities we have that flexibility built in.

THE PRESIDENT: Okay. Anything else? Okay. Thank you. Thank you very much.

We are now going to continue here. All right. I'm just checking to see if there's anybody who needs a pit stop or not. Okay, that's good, we are ready

to go. We are a bit late.

CMD 15-M15

Oral Presentation by CNSC Staff

THE PRESIDENT: We will allow the people for the next item to set up. And the next item is a presentation by CNSC staff on the Independent Environmental Monitoring Program, as outlined in CMD 15-M15.

Dr. Thompson, the floor is yours.

--- Pause

Dr THOMPSON : Donc, je devrais peut-être dire bonsoir, Monsieur Binder et membres de la Commission. Mon nom est Patsy Thompson. Je suis la directrice-générale de la Direction de l'évaluation et de la protection environnementale et radiologique.

With me today are Ms Kiza Francis, the Acting Director of the Environmental Compliance and Laboratory Services Division; Dr. Slobodan Jovanovic, the Chief Analyst of the CNSC Laboratory; Ms Marie-Pierre Grondin; and Mr. Elias Dagher who will be making today's presentation.

We also have staff involved in field sampling, laboratory analysis, data interpretation, communications and IMTD with us this afternoon. As you

will note, the success of the IEMP, or the Independent Environmental Monitoring Program, is in large part due to the collective effort of this large multidisciplinary group.

Staff have discussed the Independent Environmental Monitoring Program and responded to Commission questions in a previous hearing in February, but today we are taking the opportunity to essentially provide a more integrated overview of the program. So the presentation will focus on the objectives and some background to the program. We will have a brief demonstration on the Dashboard that is currently on our website and discuss some of the communications that have taken place and will be taking place in the future.

So I will ask Marie-Pierre Grondin to continue with the presentation.

MS GRONDIN: Thank you, Dr. Thompson.

My name is Marie-Pierre Grondin and I am the Coordinator for the IEMP. I would like to provide you with some information on CNSC regulatory oversight of environmental monitoring.

The CNSC regulations require licensees to develop, implement and maintain an environmental monitoring program. Under their licence, licensees must control releases and monitor levels of contaminants and the

environment. As part of CNSC regulatory oversight, staff review and approve licensees' environmental monitoring programs during licensing.

Throughout the operation of nuclear facilities, CNSC staff conduct various compliance activities to ensure that licensees meet regulatory requirements, licence conditions and improve environmental monitoring programs and that the public and the environment are safe. The CNSC obtained funding from the Treasury Board to upgrade its laboratory in order to support the CNSC licensing and compliance functions. The CNSC moved into the new state-of-the-art laboratory in December 2009.

I would now like to provide you with some background information and describe the purpose of this program. The IEMP was created to allow the CNSC to independently confirm that the public and the environment are safe and that no health impacts are expected due to the operation of CNSC-regulated facilities.

It is important to note that the IEMP does not relieve licensees of their responsibilities. Licensees continue to be responsible for their own environmental protection programs and the CNSC continues to perform our regular compliance activities such as reviews of compliance reports and regular inspections.

The Commission and members of the public

have on many occasions asked: How does the CNSC independently verify the licensees' results? In addition, the International Atomic Energy Agency, or IAEA, has environmental monitoring requirements for regulators. Requirement 32 of the IAEA basic safety standard states that the regulatory body shall ensure that environmental monitoring is in place and results are recorded and shall be responsible for making provision for an independent environmental monitoring program. Before creating the IEMP, CNSC staff performed a benchmarking review of environmental monitoring programs and web-based dashboard from other Canadian and international regulatory bodies such as France, Spain, South Africa and United States. These factors were part of what led to the creation of the IEMP.

Now, I would like to provide more information on how the program works. The program is planned on an annual cycle. The process starts with the program and sample planning. Therefore, before the sampling season begins, CNSC staff determine which facility and which sample will be included in that year's program. Then, from the approved sampling plans, field sampling is conducted, followed by the analysis of the sample at the CNSC lab, the interpretation of the results by CNSC technical specialists and the publication of the results on

CNSC's interactive IEMP webpage.

In the next slides I will provide more detailed information on each step of the process. The selection of sites for sampling campaign takes into consideration any upcoming licensing renewals, direction from the Commission, public concerns and previous years' monitoring results. The site-specific field sampling plans are then developed and reviewed. They take into consideration guidance from CSA Group standards, any completed environmental risk assessment, the licensees' approved environmental monitoring program and the CNSC regulatory experience with the site.

In 2012 the CNSC staff carried out an IEMP pilot where we collected and analysed samples around the Chalk River Laboratory site. Additional sampling was conducted in multiple sites in 2013 and 2014. For 2015 we are planning to collect IEMP samples at 11 different sites. These sites include power plants, a processing facility, a research facility and uranium mines and mills.

CNSC staff take samples of air, water, soil, sediment, vegetation and some local food, like meat and produce from publicly-accessible areas around the facilities. These could include parks, residential communities, beaches and local farms. All the collected samples are packaged and shipped in accordance to CNSC

protocol, respecting the chain of custody to CNSC's laboratory. In this picture, CNSC staff Ed Leader and Kate Peters are collecting a water sample near the Pickering facility.

At the CNSC lab, located in Ottawa, the samples are prepared and analyzed by CNSC staff, using best industry practices. The state-of-the-art lab is equipped to analyse samples for both radiological elements and non-radiological contaminants, also called hazardous substances.

Featured in this slide is laboratory senior analyst, Pujing Pan, placing a calibration sample into a high resolution gamma spectroscopy detector.

For your information, here are some of the equipment used to analyze radioactivity in various samples. A gas-flow proportional counter, a liquid scintillation counter, and a sodium iodine gamma counter are used to measure gross alpha, beta or gamma radiation emitting from the samples.

The high resolution gamma spectroscopy and the alpha spectroscopy are used to identify and quantify radionuclides present in the samples.

I will now discuss methods and equipment used to analyze non-radiological substances such as uranium and arsenic, just to name a few. CNSC uses x-ray

fluorescence spectroscopy, x-ray diffraction, inductive coupled plasma mass spectroscopy, ion chromatography and a total carbon analyzer to identify and quantify elements present in the samples.

The CNSC lab has many quality assurance and systematic quality control measures in place. For example, the CNSC lab participates in proficiency testing exercises provided by IAEA as part of the Network of Analytical Laboratories for the Measurement of Environmental Radioactivity, National Research Council Canada, and other Canadian and international providers. The lab achieved passing results in both radiological and non-radiological analyses, and continuously scores as one of the top performers. This provides confidence in the laboratory results. The lab also performs systematic quality control by using traceable instrument calibration standards and follows a strict chain of custody for all the samples.

CNSC is currently in the process of preparing for Laboratory Accreditation to ISO 17025. Once a lab report has been generated, a technical report is prepared. The technical report provides an overview of the years' sampling that was conducted around the site. It provides the results of the lab analysis, and details the laboratory methods that were used.

The technical report also provides an interpretation of the results by comparing the contaminant levels to available guidelines and reference levels, as well as natural background levels to confirm that there is no impact on the public or the environment.

I will now let my colleague, Elias Dagher, introduce the IEMP Dashboard published on the CNSC's website.

MR. DAGHER: Thank you, Ms Grondin.

For the record my name is Elias Dagher and I am an Environmental Program Officer with the Environmental Compliance and Laboratory Services Division. I would like to present the IEMP dashboard used to publish results in a user-friendly interactive manner. First I would like to give the Commission a live demonstration of the IEMP Dashboard.

--- Pause

MR. DAGHER: The Dashboard can be accessed from the CNSC's website. From the Main CNSC Webpage, a user can navigate through the IEMP Dashboard by highlighting the Resources Tab and selecting the Independent Environmental Monitoring Program. This will load the IEMP Landing Page, which provides an overview of the program and the process. Below the page a map of Canada provides icons for CNSC-regulated facilities for

which IEMP results have been published.

For today’s example, I will select the Bruce A and B Nuclear Generating Station, which will take us to the site-specific IEMP landing page. This page has three sections. The top section provides a summary of the sampling that was conducted at the Bruce A and B Nuclear Generating Stations, including an overview of the results and the key conclusions from CNSC staff's assessment.

The middle section shows a map of the sampled area. The icons show you where and what type of sample was taken. For instance, a droplet represents water and a cloud represents air. Below the map a legend is provided which shows you the types of samples of the other icons. These can also be identified in the legend below. When you click on an icon, a balloon will pop up which contains the unique sample code that identifies the sample as well as the results for that sample.

For more detailed information, you can scroll down to the third section which provides the full dataset presented in a table. You will notice that the unique sample code is provided in the first column and corresponds to the sample on the map.

In the table we have compared the results to available guidelines and reference levels to make it easy to see if there are any health concerns. We have also

provided background levels where available. Footnotes at the bottom of the table also provide additional information.

Above the table, the user can use the "filter items" box to search for specific entries and entries in the table. They can also use the "zoom to element" button to essentially bring up that specific sample on the map, which can then be selected and the results displayed.

Future improvements to the Dashboard will allow for trending of multiple years of data on a graph and will include the guideline or reference level as well.

The CNSC Dashboard was launched in February of 2015, with the 2013 IEMP results for the Bruce A and B Nuclear Generating Stations. Following its launch, the Dashboard had received very positive feedback from the public and from licensees. One comment submitted from a member of the public even stated that:

> "The CNSC is to be commended for taking a step in the right direction by doing its own sampling and not just relying on the licence holder's own monitoring and proprietary third party monitoring."

The CNSC dashboard currently includes

site-specific information on results for the following locations: the Bruce A and B Nuclear Generating Stations; Chalk River Laboratories and SRB Technologies Nuclear Processing Facility.

In the next fiscal year, we will publish IEMP results for 10 additional sites. These sites include the Blind River Refinery; GE Hitachi Nuclear Fuel Fabrication Facility; The former Shield Source Inc. Nuclear Processing Facility; Port Granby and Welcome Waste Management Facilities; Darlington, Pickering and Point Lepreau Nuclear Generating Stations; the Port Hope Conversion Facility; and McArthur Uranium Mine and Key Lake Mill.

The next two slides will highlight some of our communication initiatives. As part of the IEMP process, CNSC staff ensure that the licensee is provided with the site-specific executive summary and results before their publication on the Dashboard for their information.

For all new interactive IEMP pages, we inform our interested parties with an email to subscribers, a notice on the latest news headline on the CNSC website and with a Facebook post. In the last few months, CNSC staff have had the opportunity to present the IEMP in many conferences and workshops. For example, in the last month CNSC staff presented to the Canadian Nuclear Utility

Executive Forum and the Canadian Nuclear Association Regulatory Affairs Workshop. We also participated in early March at the CNSC 101 session in Kincardine, Ontario where we had the opportunity to meet and discuss with members of the community living near the Bruce Nuclear Generating Stations.

Finally, in order to inform the Commission and the members of the public, staff have included IEMP results, when available, into reports of Environmental Assessments conducted under the Nuclear Safety and Control Act.

Moving forward, we want to continue to communicate with all the interested parties. As a courtesy, CNSC staff will inform the licensees prior to each sampling campaign. We will also let the public know that we will be in the area by posting a notice on Facebook prior to the sampling.

Our field technician will have a public-friendly pamphlet to provide to the public if there are any questions on our activities and objectives.

In spring 2015, a new CNSC Youtube video featuring Marie-Pierre and myself will be posted online to help explain the program in plain language. We will also continue to email subscribers and post latest news notices when new IEMP results become available.

Finally, the IEMP results will be included in CNSC's annual reports.

In terms of next steps, the laboratory staff are currently completing the analysis of the 2014 samples. Then, staff will finalize the technical reports and create Dashboard pages from the previous sampling campaigns. As previously mentioned, we are currently in the process of planning the 2015 IEMP sampling campaign.

Finally, we are considering further community outreach and consultation opportunities for the public and Aboriginal groups. For example, we could conduct community outreach that would include both internal and external workshops to look at lessons learned and how we can continuously improve the program.

I will now let Dr. Thompson conclude this presentation.

DR. THOMPSON: I would like to thank you for providing us with the opportunity to present the Independent Environmental Monitoring Program. As you saw, the IEMP aligns with the IAEA safety requirements, specifically number 32 in the Basic Safety Standards, and it is one more way that we can confirm that the regulation of the nuclear industry is effective in protecting the health of the public and the environment.

We believe this program adds transparency

to the compliance verification processes and helps CNSC achieve our mandate of disseminating objective scientific and regulatory information to the public.

We are available to answer your questions

THE PRESIDENT: Thank you.

Let's start the question session with Monsieur Tolgyesi.

MEMBRE TOLGYESI : Merci, Monsieur le Président.

So what my understanding is that the whole Independent Environmental Monitoring Program will be executed by CNSC, that means sample taking in the field, field sampling, laboratory analysis, interpretation and whatsoever. It will be done by CNSC staff.

DR. THOMPSON: Patsy Thompson, for the record.

That's correct. One of the objectives is to address concerns that had been expressed for many years by the public and also from time to time from the Commission where the activities of the CNSC were to review licensees' programs and review the outputs of the programs and do some compliance inspections. This essentially allows CNSC staff to be involved from start to finish and collecting samples, analysing and making data available to the public.

MEMBER TOLGYESI: Will it be done on a continuous basis annually or some other frequency?

DR. THOMPSON: Patsy Thompson, for the record.

As Mr. Dahger and Ms Grondin mentioned, there was a pilot project in 2012 so that we could essentially test our procedures and make adjustments. The plan is to cover all facilities for a two to three year period so that we can get some trending information. After that we would reduce essentially to a certain frequency to be determined. We are probably looking at something between a two to three year frequency, depending on the nature of the facilities, public concerns that may be expressed in other factors.

THE PRESIDENT: I just want to clarify. I'm not sure. This is not a substitute for the environmental monitoring by the licensees? They're going to do their own and some of them do also their own independent?

UNIDENTIFIED SPEAKER: (Off microphone). Yeah.

THE PRESIDENT: Okay. I just wanted to make sure that -- I thought that we heard that this is going to be the whole monitoring of performance. So just to clarify.

DR. THOMPSON: So just to be clear. Patsy Thompson for the record.

So the licensees' obligations are specified in the Regulations. They all have programs in place. They will continue to do so. We continue to review their programs, do compliance verification, validate the reports, and some of them, as you mentioned, have third parties doing their own monitoring to verify the licensee's performance.

MEMBER TOLGYESI: So in case of samples that overpass regulatory limits, what you do will be a resampling or you will wait for a year and you will do that next year?

DR. THOMPSON: Patsy Thompson for the record. I'll start responding and then I'll ask Kiza Francis to explain the process we would use to engage the licensee if something like that -- and our regulatory colleagues in the Regulatory Operations Branch.

And so the program should not, I would say, detect exceedances and bad performance. The CNSC Robust Compliance Program is intended for that purpose. Licensees have action levels and limits and in many cases administrative levels that allow them to report to us and identify if something is out of spec. And so that licensing and compliance process is in place and should

catch essentially non-compliances.

If the CNSC Independent Monitoring Program would identify areas where levels are much higher than we would expect, then the first step would be to resample, validate our procedures.

And then I'll ask Kiza Francis to continue with the next steps that would be taken to ensure that we essentially have appropriate information.

MS FRANCIS: Kiza Francis for the record.

What I can add to what Dr. Thompson has mentioned is that if we resample and we still see a higher number than expected -- and we would be communicating with the licensee during this time as well -- we could take split samples with the licensee. We would also be looking at comparing the CNSC analytical protocols and the licensee's protocols because our protocols aren't necessarily the same.

And then hopefully that will give us an explanation for any differences between our results and the licensee's results or why our results were over regulatory limit and then we would have a path forward from there.

But that is part of our process, is we have a stop and to determine what to do to move forward but we wouldn't expect to see something over regulatory limit. What might happen is our results are different than the

licensee's and that's where this process would really come into play.

MEMBER TOLGYESI: When all these 14 or so many sites will be included and monitored, what will be the manpower required to do all this process and what will be the cost and how will you recover it?

DR. THOMPSON: Patsy Thompson for the record.

The program currently is operated within the existing CNSC resources. As Mr. Dagher mentioned or Ms Grondin, we received funding from Treasury Board at the time, where funding was available for making improvements to federal facilities and so the laboratory equipment benefited from that program. We also benefited from fairly significant funding from the CNSC.

Essentially, we have staff in the Environmental Compliance and Laboratory Services Division, both in the Environmental Group, who are trained in designing monitoring programs and taking samples. We have a field technician. We have a laboratory analysis senior analytical specialist and technicians. And so the program is designed to run within the existing resources.

We have presented and prepared a business case where we see certain other activities being launched as we move forward but it would be rationalized within

essentially something that can be sustained with the CNSC funding envelope.

The program is cost-recoverable. It is part of the CNSC's compliance activities and as such is part of the licensing fees.

THE PRESIDENT: Monsieur Harvey.

MEMBRE HARVEY : Merci, Monsieur le Président.

Well, thank you for the presentation. I think this is a huge task to do that and it's very interesting. My point, though, is when reading that, it's like you're starting from zero and not taking into account what is currently done by licensees, Health Canada, MOE and all those collecting data in the field.

So my question is: Will there be a lot of duplication in that? And coming back to the point put on the table by the President, what is the need to maintain the requirements for the licensees if we have all the data?

DR. THOMPSON: Patsy Thompson for the record.

So in terms of your first line of question in terms of are we duplicating what Health Canada or the provinces are doing?

Before, when we were planning for the pilot project and when we were preparing the business case

in terms of how to meet the IEA section 32 requirements, we did have discussions with Health Canada. We had discussions with the Ontario Ministry of Labour, for example, who does monitoring around some of the Ontario NPPs.

And so from that work we identified, for example, the Ministry of Labour has very specific monitoring locations and fairly high detection limits because their objective is to detect if there's an incident or an event at a station and taking appropriate action.

Health Canada has a network also that is closer to the facilities and so when we're designing our program we're taking into consideration what others are doing.

We are doing sort of annual plans for limited periods of time. After that, the intent is to go to a two- or three-year period, and so we will not be duplicating what the licensees are doing. The licensees have much more comprehensive monitoring programs than what we're doing here.

When staff were designing the program and the plans for each site, we are taking into consideration what the licensee is doing. We're taking into consideration the risk assessment, the dispersion modelling and other things, and we're essentially focusing on key

areas where we get the most bang essentially for the sampling effort.

MEMBRE HARVEY : Mais est-ce dire que les données de ces autres organismes-là vont être sur notre site, sur le site de la Commission?

Dr THOMPSON : Patsy Thompson.

Effectivement, on a eu des discussions avec, par exemple, le ministère du Travail de l'Ontario. Étant donné que leurs données sont... les valeurs sont tellement plus élevées, c'est généralement sous les limites de détection, c'est très difficile de comparer nos données, parce que nous, on a une capacité de surveillance vraiment au niveau environnement, pour détecter des niveaux environnementaux. Donc, la comparaison avec la province essentiellement ne donnerait pas grand-chose.

Avec Santé Canada, on a eu des discussions pour pouvoir relier les sites Web pour pouvoir partager les informations. Ça s'avère plutôt difficile, mais on a, à chaque année, un programme... des rencontres avec Santé Canada. On a une entente administrative et on discute des ces choses-là.

MEMBRE HARVEY : Pour ce qui est de maintenir l'obligation pour les opérateurs d'avoir leur propre programme, quelle est la plus-value d'avoir deux programmes?

Dr THOMPSON : La plus-value, c'est essentiellement de répondre aux interrogations du public, d'une part, puis les attentes de la plupart des organisations internationales, où il y a une exigence pour que l'organisme règlementaire puisse valider de façon indépendante les niveaux dans l'environnement et que le public est protégé. Donc, c'est de rencontrer ces obligations-là. Ça donne aussi probablement un niveau de confort plus grand avec certains membres du public, en tout cas, que ce n'est pas des données récoltées et analysées par l'industrie, dont qui peuvent être d'une certaine façon biaisées.

On a fait beaucoup de travail pour le BAPE dans leur processus qui est en train d'être finalisé pour le dossier sur l'uranium et on a fait un effort assez important de consolider toutes les données de l'industrie pour présenter un rapport sur la performance environnementale et aussi au niveau des doses aux travailleurs de l'industrie minière canadienne, et une des critiques qu'on a eues, c'est que ces données-là provenaient de l'industrie. Donc, il y a vraiment un besoin d'avoir des données indépendantes.

MEMBRE HARVEY : Est-ce que la couverture de votre programme va être aussi grande, plus grande ou moins grande que ce qui est fait actuellement par les

opérateurs?

Dr THOMPSON : La couverture est moins grande. Au niveau fréquence d'échantillonnage, c'est moins grand. Au niveau du... Par exemple, tantôt on regardait la carte pour la station Bruce. Si vous voyez le nombre d'échantillons que nous, on récolte par rapport au programme qui est très étendu de Bruce Power, il y a vraiment une différence importante.

Donc, nous, on s'est limité aux endroits où on pensait que c'était plus pertinent, en connaissant les modèles de dispersion puis en connaissant aussi les habitudes du public.

THE PRESIDENT: I don't know why you are shying away from saying that you're basically auditing the work that's done by the licensees to make sure that the data that they represent is true. This is another way of putting confidence in the material in there and it only can be provided -- I don't know why you're afraid to use the word "audit." I know we don't like to -- we like to use inspection. We like to do verification. In many ways -- and by the way, I think this is terrific. I went on your little interactive map and I looked at Bruce and I looked around it. It gives me another comfort level that the kind of data we are getting from Bruce is confirmed by our staff. It's an audit function. It's not a replacement.

MEMBRE HARVEY : Bien, j'imagine, oui, qu'il va en avoir, mais est-ce que les standards qu'on va utiliser sont les mêmes que ceux utilisés par Bruce ou par OPG et les autres? Est-ce qu'on va se doter de standards plus sérieux ou c'est les mêmes, lorsqu'on va comparer les données, on va avoir utilisé les mêmes méthodes?

Parce que j'ai entendu tantôt justement que... C'est venu sur le sujet, puis on disait, bien, on changera les méthodes. Mais est-ce que, à l'heure actuelle, ce qui est collecté par quel que soit, par Bruce ou par les autres, est-ce que c'est fait selon des standards que vous avez approuvés, qui sont approuvés et qui vont être les mêmes, dans le fond?

Dr THOMPSON : Patsy Thompson pour la Commission.

Essentiellement, c'est comme deux programmes différents.

Quand on fait l'évaluation des programmes des détenteurs de permis, on regarde l'ensemble de leurs programmes, la façon dont le programme est conçu, est-ce qu'il mesure les bonnes choses aux bons endroits, est-ce que les échantillons sont pris avec des méthodes acceptables. On regarde aussi les méthodes de laboratoire.

Et à un certain moment donné, pour utiliser le mot « audit », il y avait des audits très

détaillés de l'ensemble des programmes, où on regardait les programmes, on faisait des entrevues détaillées avec le personnel des détenteurs de permis, on vérifiait leur compétence, leur formation.

Une fois que les programmes ont été bien établis et plus stables, la tendance, c'est de faire plus des inspections qu'on appelle de type 2. Donc, par ces programmes-là, par la revue de l'approbation et les inspections, on s'assure que les méthodes sont appropriées.

Est-ce que c'est les mêmes méthodes? Généralement, c'est des méthodes standards quand elles existent. L'avantage probablement du laboratoire de la Commission, c'est que c'est un laboratoire qui est plus récent. On appartient au réseau ALMERA, qui nous permet aussi d'avoir accès à des méthodes de pointe. L'équipement au laboratoire, c'est vraiment un équipement de pointe que peu de laboratoires ont parce que, essentiellement, c'est un laboratoire qui a été conçu là dans les dernières années.

Aussi, une des choses que l'on a fait parce que c'était un besoin, par exemple, il y avait beaucoup de questions sur l'hydrazine dans l'environnement. Quand il y a eu des rejets de certaines installations, il n'y avait pas de méthode de détection d'hydrazine dans l'environnement à des faibles niveaux.

Donc, Slobodan Jovanovic avec l'aide d'un étudiant ont développé une méthode d'analyse pour l'hydrazine à de faibles niveaux, ont aussi développé la méthode d'échantillonnage et de conservation de l'échantillon, et cette méthode-là a été publiée dans une revue scientifique sérieuse, donc validée.

On a aussi fait des exercices de validation avec Environnement Canada, qui sont aussi intéressés à cette méthode-là.

Donc, il y a ce travail-là qui est fait, que les détenteurs de permis -- c'est plus un programme de routine qu'ils ont en place -- n'ont pas nécessairement à faire cet effort scientifique là supplémentaire.

THE PRESIDENT: Ms Velshi...?

MEMBER VELSHI: Thank you. Does your program allow you to respond to an incident at a facility so you can go quickly and take some samples?

DR. THOMPSON: Patsy Thompson, for the record.

Yes, it does, and we have on a number of occasions responded to that kind of event. For example, not that long ago but a number of years ago, there was an issue of radionuclides that were detected in Ottawa, municipal sewer sludge. And so we did do a lot of work at that time to respond to this event and identified a

radionuclide so that we could essentially know what was going on, but also provide public reassurance that this was a short-lived radionuclide and there was no health impact.

We have also taken some soil samples around some facilities and, as you know, we have made the commitment that when the Port Hope Area Initiative gets going, as sites get cleaned up the CNSC would go and take samples and essentially confirm that the clean-up criteria have been achieved.

MEMBER VELSHI: Thank you.

My last question, to make it easy for members of the public, so whether it's the licensee, whether it's the CNSC, Health Canada, Ontario Ministry of Labour, is there one stop shopping for them where they can see what the results are in one place or do they need to go to different websites?

MS FRANCIS: Kiza Francis, for the record.

I don't believe there is. One of the pieces of feedback that I got when I did the presentation at the CNA Regulatory Affairs workshop, from one of the licensees, they just came up to me afterward and they said: Why don't we have this on our website? Like the Dashboard that you have is so easy for the public to see that we have been looking at it and thinking that we shouldn't be presenting our results in an annual report with all these

numbers. We should be having something more public friendly.

So based on that interaction I'm going to say no, there is no site that the public can go to and get everything in one stop shopping and it's not something that we have done on our website yet.

THE PRESIDENT: But you know that we are very -- how shall I say it -- insistent on hot- linking to each other and now this technology allows you to do this, so why can't they hotlink to us and we can hotlink to them?

DR. THOMPSON: Patsy Thompson, for the record.

You know what I'm going to say is essentially, is we have had discussions with Health Canada in terms of having a process in place to have access to each other's data and it would be essentially important if there was ever an emergency where there is essentially a lot of baseline information, so current operational data available that could be used to compare levels, for example if there was an event or an accident, and so we have entered into those discussions.

It seems that it's not as simple as it should be from a technical point of view. As I mentioned earlier, I think, in French, was that when we were preparing for this project we did meet with the Ontario

Ministry of Labour and Health Canada. One of the issues with the programs that the Ministry of Labour administers, it is to be able to respond to events and so the detection limits on their program are quite high and are not geared towards environmental levels from routine operations.

THE PRESIDENT: Dr. McEwan...?

MEMBER McEWAN: Thank you. Thank you for the presentation. I enjoyed it.

This is just a very simple question. If I look at your dashboard, is there any scientific value or educational value in taking geographically- distant samples? I mean if you look at this map, taking it out of Chepstow or Bradley and comparing those with the samples around the site, you would effectively then have a negative control by which to judge your site samples.

DR. THOMPSON: Patsy Thompson, for the record.

I'm not sure I followed your train of thought.

MEMBER McEWAN: So you know, the negative control is in my mind always an important value. You are sampling around the NPP. So if you go -- I don't know. It looks as if it would be about 50 miles to Chepstow, and you took samples there and you would expect those to be entirely negative, you would then have a local negative

control against which to judge your samples. So it just seems to me that that type of sampling could give you confidence in your results, a normal background if you like.

DR. THOMPSON: Patsy Thompson. Yes.

So essentially what you are saying is that by monitoring --

MEMBER McEWAN: Somewhere else, yes.

DR. THOMPSON: -- further away and more remotely it would give us essentially access to baseline information.

MEMBER McEWAN: And I think as an educational tool for the public that would be a really useful thing to do.

--- Pause

MR. DAGHER: Elias Dagher, for the record.

In our current sample plans that we have been developing we have been looking at near field samples, so we take near field samples, midfield samples and far field samples, as well as reference samples. So the reference locations have not been covered at this sampling plan. This was one of the early ones back in 2013, but in all future sampling plans we are looking at those.

THE PRESIDENT: Let me piggyback on this. So I notice you're talking about water as a kind of -- but

is that drinking water or is it well water near the site, because I would like you guys to always have a sample of drinking water in around the municipalities as a reference.

MR. DAGHER: So for the Bruce 2013 IEMP sampling plan -- Elias Dagher, for the record -- we did take the intake to the water supply plants, to the drinking water supply plants, so that is the one up here. It is one of these water samples. So we did consider that in the sampling plan.

THE PRESIDENT: So is that guaranteed and then what comes out of my tap --

MR. DAGHER: This will be more -- this will be -- the concentrations here should be higher because this water will go through the drinking water supply plant. It will be treated to drinking water quality standards. Some of the elements don't get treated, such as tritium, so those elements would be represented here. There would be some radioactive decay based upon the length of time the water is in the distribution system, but essentially it is a conservative number.

THE PRESIDENT: No, I understand, but again for the educational purpose I think if you actually said that we have looked at the municipal tap water of the Mayor's Office it has a different kind of acceptability then taking something from the lake.

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

So the intent was to take samples at the intake of the drinking water plant that distributes drinking water to citizens. We could look at taking tap samples as well from people's houses, I guess, or some restaurant or hotel to be representative of what comes out of the tap as well as what goes into the drinking water supply plant.

THE PRESIDENT: You will remember the incident from the sewage contamination in Ottawa, they were accusing all the stuff coming from Chalk River and remember there was absolutely no relationship. So again, it's what people believe and what is the hard data is very different.

DR. THOMPSON: Sorry, we were having a jurisdictional debate. So if there was a question in there I missed it. I'm sorry.

THE PRESIDENT: Okay, anybody else?

I noticed that you are putting in the limit, the regulatory limit. I wonder if sometimes -- I don't know where, maybe in the little window, I actually found the little window very neat, but if there was some way to explain the health limits rather than always the purely regulatory limit. You know, like I don't know how we are going to deal with the 7000 Bq every time you are

going to put it in there as a regulatory limit, people will not believe it. I don't know what to do about that. I don't know if you have some ideas about the difference between the regulatory limit and the health limit. I'm just digressing here I think.

But more importantly I was interested in -- so what plan do you have to get the Aboriginal communities actually involved with you, maybe in the sample taking measurement? Is there a way of actually getting them a lot more involved, because that is the kind of request we always get from our public hearing?

DR. THOMPSON: Patsy Thompson, for the record.

When we were in Kincardine for the DGR hearings there was some discussions about engaging for like the Métis Nation of Ontario, for example, in terms of having a discussion on what type of environmental media, what types of animals or plants are of interest to them that could be monitored and measured.

So we haven't put forward a plan yet, but it's something that we have heard that there is an interest and I know that Bruce Power, in preparation for the license renewals have met with at least three Aboriginal groups who have expressed an interest in the IEMP and so we will be pursuing those contacts and engaging them to see what would

make sense for them.

There are community-based programs in northern Saskatchewan, as you know, and so we are considering what is being done by the community, but we also have to sort of weigh the benefit of having something on our website that is really totally independent. Some of the community-based programs right now in Northern Saskatchewan are funded by Cameco and AREVA and so we have to be careful that we can engage them, collaborate. but we also need to have something that can be viewed and seen as independent by people who will be using the data.

THE PRESIDENT: Well, that's what I mean. So even in northern Saskatchewan to do maybe some sampling of traditional food and some of those things may be a useful kind of a thing to do.

DR. THOMPSON: Patsy Thompson, for the record.

Elias Dagher has been working with UMMD and there is a plan to meet with the Saskatchewan Government representatives to see what could be done in that line.

THE PRESIDENT: Okay. Anybody else? Okay, thank you. Thank you very much.

THE SECRETARY: We will be taking a 10-minute break to allow those who should not be in the

room for this confidential matter to leave the area, that includes the technical crew in the back, and so we will be back in 10 minutes for the next item.

Thank you.

--- Whereupon the hearing adjourned at 6:41 p.m.,
to resume on Thursday, March 26, 2015
at 9:00 a.m. / L'audience est ajournée à 18 h 41,
pour reprendre le jeudi 26 mars 2015 à 9 h 00