

**Canadian Nuclear  
Safety Commission**

**Commission canadienne de  
sûreté nucléaire**

**Public meeting**

**Réunion publique**

**August 15<sup>th</sup>, 2012**

**Le 15 août 2012**

Public Hearing Room  
14<sup>th</sup> floor  
280 Slater Street  
Ottawa, Ontario

Salle d'audiences publiques  
14<sup>e</sup> étage  
280, rue Slater  
Ottawa (Ontario)

**Commission Members present**

**Commissaires présents**

Dr. Michael Binder  
Dr. Moyra McDill  
Mr. Dan Tolgyesi  
Ms. Rumina Velshi  
Dr. Ronald Barriault  
Mr. André Harvey

M. Michael Binder  
Mme Moyra McDill  
M. Dan Tolgyesi  
Mme Rumina Velshi  
M. Ronald Barriault  
M. André Harvey

**Secretary:**

**Secrétaire:**

Mr. Marc Leblanc

M. Marc Leblanc

**Senior General Counsel:**

**Avocat général principal :**

Mr. Jacques Lavoie

M. Jacques Lavoie

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Ottawa, Ontario

--- Upon commencing at 9:05 a.m./

La réunion débute à 9h05

**MR. LEBLANC:** Bonjour, Mesdames et Messieurs. Bienvenue à la continuation de la réunion publique de la Commission canadienne de sûreté nucléaire.

We have simultaneous translation. Please keep the pace of 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.

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'd also like to note that this proceeding is being video webcast and that archives will be available on our website for a three-month period after the closure of the proceedings.

I would also ask you to 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.

**THE CHAIRMAN:** Thank you, Marc.

Good morning and welcome to everybody.

Mon nom est Michael Binder. Je suis le président de la Commission canadienne de sûreté nucléaire. Je vous souhaite la bienvenue and welcome to all of those joining us via webcast or by teleconference.

I would like to begin by introducing the members of the Commission that are with us today; on my right, Dr. Moyra McDill and Mr. Dan Tolgyesi, and on my left, Ms. Rumina Velshi, Dr. Ronald Barriault and M. André Harvey.

We have heard from our secretary, Mr. Marc Leblanc. We also have Mr. Jacques Lavoie, senior general counsel to the Commission with us here today.

**MR. LEBLANC:** So the *Nuclear Safety and Control Act* authorizes the Commission to hold meetings for the conduct of its affairs. The agenda was approved yesterday. Please refer to the agenda 12-M38.A for the complete list of items to be presented today and tomorrow.

In addition to the written documents that have been reviewed by the Commission for today's meeting,

CNSC staff and licensees will have an opportunity to make presentations and Commission Members will be afforded an opportunity to ask questions on the items before us.

**THE CHAIRMAN:** Okay. The first item today is the Status Report on Power Reactors, which is under CMD 12-M41. I understand, Mr. Rzentkowski, you will make the presentation. Please proceed.

## **6. Status Report**

### **6.1 12-M41**

#### **Status Report on Power Reactors**

**MR. RZENTKOWSKI:** Thank you very much, Mr. President.

I would like to provide a further update to the information included in the Status Report on Power Reactors, CMD 12-M41.

First, however, I would like to point out that this morning we received a preliminary report from all Ontario sites about strike action as a manifestation of solidarity with the CANDU Energy Inc. employees.

The Society of Professional Engineers and associates who represent some employees of CANDU Energy

Inc. have been in a legal position to strike from Monday, July 9<sup>th</sup>. Since that time, Bruce Power and Ontario Power Generation have been closely monitoring the situations and the members of the society from CANDU Energy Inc. have been picketing nearby locations.

This morning, however, the access to the sites is partially blocked.

At this point in time, there is no concern with regard to the safe operation of the units. The licensees are maintaining the minimum shift complement required.

Now I would like to go to the Status Report of Operating Reactors.

First update is concerning Section 1.3 which is Darlington. Unit 2 is currently at 94 percent full power. The unit has been de-rated in order to reduce the likelihood of a reactor trip due to recent problems with over-responsive in-core flux detectors. So this is directly related to the NOP methodology we have discussed yesterday. Due to the sensitivity of those detectors, they may eventually trip, especially during the refuelling action, and that's the reason for de-rating the unit for some period of time.

Section 1.4, Gentilly-2, la sortie de la terre, arrêt garanti, est prévu pour le 30 août 2012.



Nous aimerions aussi apporter une mise à jour au statut de la centrale Gentilly-2 en présentant un rapport initial d'événement verbalement.

Je passe donc la parole à M. François Rinfret, directeur du Programme de réglementation de Gentilly afin de décrire cet événement.

**M. RINFRET:** Merci, Dr. Rzentkowski.

Ici François Rinfret. Bonjour, Monsieur le président, membres de la Commission.

J'aimerais apporter une mise à jour concernant un arrêt ordonné de la centrale qui a été appelé vers le 28 juillet, donc il y a quelques jours. Cet arrêt ordonné, c'est-à-dire un arrêt dans l'ordre, donc a été appelé pour réparer une fuite interne, donc à une garniture d'une pompe modérateur. Le titulaire a ainsi constaté l'augmentation d'une fuite vers le recueil de cette eau du modérateur et a décidé, suite à une analyse interne et ce qu'on appelle une évaluation technique d'exploitabilité, de procéder à l'arrêt, donc, pour faire cette réparation.

Présentement, la centrale est en état d'arrêt garanti. Les préparations pour la réparation à la garniture de la pompe modérateur sont en cour et, évidemment, comme pendant tout arrêt, le titulaire en profite pour réparer d'autres composantes de la centrale.

Alors comme disait Dr. Rzentkowski, la centrale devrait normalement ressortir de son état d'arrêt garanti vers la fin du mois d'août, donc vers le 30 août.

Alors c'est ça. Merci.

**THE CHAIRMAN:** Go ahead. Is that all the updates?

**M. RINFRET:** Je retourne la parole à Dr. Rzentkowski.

**MR. RZENTKOWSKI:** I have a further update concerning Section 1.6 of the Status Report, which is Pickering B.

Unit 6 is currently at 90 percent full power. Unit 6 was shut down on August 11, 2012 on orders from the Independent Electricity System Operator because of concern about grid stability.

Unit 6 was restarted on August 12<sup>th</sup> and is currently, as I mentioned, at 90 percent full power.

Thank you. This concludes my status report.

**THE CHAIRMAN:** Okay. Thank you.

Let's open up the floor for questions.

Monsieur Harvey?

**MEMBRE HARVEY:** Je reviendrais un peu à Hydro-Québec, Monsieur Rinfret.

Vous parliez qu'il y avait une fuite et que

la fuite est devenue plus importante. Donc il y avait déjà une fuite.

Est-ce que, à ce moment-là, la Commission avait été avertie qu'il y avait une fuite ou qu'est-ce que ça prend pour avertir la Commission et est-ce que la Commission a été consultée vis-à-vis la décision de fermer le pouvoir?

**M. RINFRET:** Ici François Rinfret.

Le système du modérateur a, à l'intérieur de ce même système, un sous-système de recueil, donc de fuites normales aux garnitures d'une pompe. Comme toute pompe, il peut y exister des fuites normales qui peuvent évoluer avec le temps, dépendant des conditions.

Donc ce système-là reçoit les fuites internes normales de l'exploitation.

L'exploitant, par contre, peut vivre avec une fuite comme ça pendant très longtemps, mais si la fuite évolue, il doit prendre une décision à savoir s'il peut ou non se payer de laisser aller une fuite et du recueil pendant quelques semaines ou quelques mois, ce qui pourrait être le cas.

Avec une petite fuite, le système est fait pour la recevoir, pour la recueillir, à la traiter. Mais ça devient une question d'exploitation, de qualité d'exploitation, à savoir s'il devrait ou non continuer à

l'exploiter de cette façon.

Donc le titulaire a décidé, à ce moment-là, d'arrêter de lui-même.

Il n'y avait pas, à ce moment-là, de limite atteinte pour que la Commission s'en mêle, pour que le personnel de la Commission ait à donner une autorisation ou quoique ce soit. C'est une décision d'exploitation d'arrêter là.

Quant aux effets de cette fuite-là, bien, évidemment, il y en a toujours un petit peu de vapeur de tritium qui pourrait se retrouver dans le bâtiment du réacteur. Ça affecte la protection que les travailleurs et les travailleuses devraient normalement porter pour aller dans le bâtiment du réacteur.

Du point de vue économique, c'est embêtant aussi d'avoir à se -- à porter des appareils respiratoires. Donc, on peut vivre avec cette condition-là pendant un certain bout de temps. On peut changer les conditions de la centrale, augmenter les -- le taux des désécheurs dans cette région-là mais, à un moment donné, le titulaire prend une décision d'arrêter par lui-même.

Bien, comme je disais, pas de rejets anormalement élevés, pas de -- on est dans les normes dans les pourcentages acceptables, pas de problèmes ou pas de risques aux travailleurs non plus mais une décision pour

la qualité d'exploitation d'arrêter pour pouvoir procéder à cette réparation-là.

Est-ce que ça répond ---

**MEMBRE HARVEY:** Comme ça si je comprends votre exploitation, il y a comme une sorte de canal -- c'est peut-être pas le bon mot -- qui recueille des fuites à différents endroits?

**M. RINFRET:** Absolument.

La raison pour laquelle ça se produit c'est que l'eau lourde du modérateur ou même du caloporteur vaut très chère, évidemment, et, en plus, c'est une source de rayonnement externe pour -- pardon, interne pour les travailleurs.

Alors, il y a plusieurs raisons de tout faire pour conserver cette eau-là.

Donc, ces garnitures-là ne sont pas comme des garnitures typiques de pompes de piscine avec du packing ou des éléments comme ça, c'est un système, un boîtier avec une injection -- une injection d'eau lourde -- pour en maintenir par un système de labyrinthes -- je voudrais pas entrer dans les détails ---

**MEMBRE HARVEY:** Mais ça veut dire que le canal peut recueillir deux/trois fuites en même temps là?

**M. RINFRET:** Ah oui, absolument.

Le système de recueil ---

**MEMBRE HARVEY:** Donc ---

**M. RINFRET:** --- reçoit les fuites de plusieurs composantes ---

**MEMBRE HARVEY:** --- c'est pas à partir ---

**M. RINFRET:** --- du système.

**MEMBRE HARVEY:** C'est pas à partir du système de recueil que vous détectez la fuite, il faut savoir d'où ça vient aussi.

**M. RINFRET:** Ah, il y a des moyens de savoir d'où ça vient à partir des 'side glances' -- des regards qui existent dans le système de recueil.

On sait à ce moment-là d'où vient -- d'où provient la fuite. Ça aide à prendre une décision d'exploitation.

Il y a d'autres paramètres qui peuvent être activés dans une centrale aussi. On s'aperçoit que l'ambiance tritium dans une salle peut être plus élevée, on s'aperçoit que c'est probablement du modérateur. C'est peut-être un endroit.

Le travail d'exploitation se fait par les opérateurs à partir des instruments qui existent dans la centrale. Donc, c'est pas -- c'est pas une grande surprise.

**MEMBRE HARVEY:** Ça paraît un peu inquiétant quand on dit, bien, il peut y avoir un peu de tritium dans

le -- dans la bâtisse.

**M. RINFRET:** En fait, je vous dirais que, non, pour avoir travaillé là pendant plusieurs années, c'est pas inquiétant. C'est comme n'importe quelle condition d'une centrale. On connaît les risques, on sait à peu près où ils sont. On sait qu'ils évoluent.

Tous les instruments sont là. Les travailleurs ont une formation pour les détecter, pour prendre les mesures appropriées. Alors, c'est pas inquiétant pour le personnel à la centrale. Vous pouvez leur demander si vous voulez.

**MEMBRE HARVEY:** Ah, non ---

**M. RINFRET:** Mais ça fait partie de la planification du travail d'être conscient des risques qui sont présents.

**MEMBRE HARVEY:** Est-ce que Hydro-Québec voudrait -- Hydro-Québec est ici?

**M. RINFRET:** Hydro-Québec est là. Monsieur Désilets puis Monsieur Desbiens sont là si vous voulez leur posez des questions.

**MEMBRE HARVEY:** Je voudrais entendre quelques mots sur le ...

**M. RINFRET:** D'accord.

**M. DÉSILETS:** Mario Désilets, Directeur Production Nucléaire à Hydro-Québec, Production.

Comme Monsieur Rinfret a expliqué, on a eu une fuite à une garniture d'une pompe modérateur, une fuite interne et on a des moyens de la recueillir et on a des moyens aussi d'identifier la provenance de la fuite.

Et, comme Monsieur Rinfret a dit aussi, on peut vivre avec un taux de fuite mais quand le taux se dégrade, bien, on doit faire une évaluation de si on peut vivre avec ou si on est mieux de réparer.

Alors, le service technique a fait une évaluation technique d'exploitabilité et comme le taux de fuite avait augmenté ces dernières semaines, on a pris la décision d'arrêter et de faire la réparation.

**MEMBRE HARVEY:** Quand vous parlez d'augmenter, c'était -- la fuite, comment on peut apprécier ça là la ...

C'est en pourcentage?

**M. DÉSILETS:** Mario Désilets, Directeur, Production nucléaire.

On a un volume dans notre réservoir d'à peu près -- de 200 litres et, avec le taux de démarrage de la pompe qui retourne l'eau dans le modérateur, on est capables d'évaluer notre taux de fuite.

Alors, on était rendus à peu près à 20 litres -- 20 litres à l'heure. On trouvait que c'était une quantité assez appréciable puis que la garniture était



en train de se dégrader alors on a décidé de la changer.

**MEMBRE HARVEY:** Pour le personnel, il y a pas de -- pour des fuites comme ça, il y a pas de normes, il y a pas de -- de dire que quand ça dépasse un tel taux puis on va quelque chose?

Ça n'existe pas?

**M. RINFRET:** À ces taux-là, on parle de fuite interne, on parle pas d'une quantité qui poserait une limite d'exploitation, non.

C'est simplement une question de conséquences potentielles et là le titulaire prend une mesure appropriée et prévoit dans son avis d'exploitation, dans son avis technique d'exploitation, doit prévoir ou prévenir les conséquences potentielles.

Donc, possiblement un brie un peu plus important de la garniture avant la fin de l'année 2012 ou bien -- qu'est-ce qu'y peut arriver -- ces conditions-là qui amèneraient un risque un peu différent pour la santé des travailleurs en centrale.

Et, évidemment, si le risque était trop grand au recueil, si le recueil est trop grand, ça peut poser problème pour les autres systèmes qui sont branchés sur le même système de recueil.

Alors, pour éviter, si on veut, un salissage des autres systèmes, la décision a été prise

d'arrêter.

**MEMBRE HARVEY:** Je reviens à Monsieur Désilets: Est-ce que la durée de l'arrêt est due spécifiquement à la réparation de la fuite ou si c'est parce que vous faites d'autres réparations en même temps?

**M. DÉSILETS:** Mario Désilets.

Le cheminement critique c'est la réparation de la fuite modérateur mais, comme Monsieur Rinfret a dit tantôt, on en profite pour régler d'autres -- de faire d'autres travaux puis de régler d'autres problèmes qu'on avait, d'autres défauts qui existaient et qui -- pour lesquelles on avait de la difficulté à intervenir dans les salles parce qu'elles n'étaient pas accessibles là -- qu'on fait normalement dans des arrêts planifiés mais là on en profite, vu qu'on est arrêtés, pour les régler.

**MEMBRE HARVEY:** Merci.

**LE PRÉSIDENT:** Mais étant donné qu'on attend pour une décision sur la réfection, est-ce que ça faut la peine de faire toutes les réparations au cas où?

**M. DÉSILETS:** Mario Désilets.

Bien, c'est sûr que, quand on veut exploiter une centrale, on essaie de l'exploiter avec des équipements qui sont à l'optimum et on a prévu exploiter jusqu'à la fin de l'année fait qu'on s'assure que nos

équipements sont en bon état pour se rendre jusqu'à la fin de l'année.

**LE PRÉSIDENT:** Alors, le plan c'est pour retourner aux opérations normales?

**M. DÉSILETS:** Effectivement.

**LE PRÉSIDENT:** Même si c'est seulement pour deux mois?

**M. DÉSILETS:** Oui, même si c'est seulement pour deux mois.

**LE PRÉSIDENT:** Staff?

**M. RINFRET:** C'est une question de nature économique mais pour ce qui est de la fuite, des opérations entourant la fuite, ça devient une opération pratiquement routinière pour nous.

L'autorisation de procéder à cette réparation-là devait être faite parce qu'il y avait une limite qui était atteinte dans la façon de isoler la fuite. Ça été donné au cours de la semaine alors tout va pour le mieux dans ce domaine-là.

**LE PRÉSIDENT:** O.k.

Dr. Barriault?

**MEMBER BARRIAULT:** Thank you, Mr. Chairman.

On Pickering B, you had to de-rate because of algae. Was this problem associated with the cooling system?

And, is this a recurrent thing?

**MR. RZENTKOWSKI:** It happens almost every year. It's not really a very frequent thing but it happens almost every year.

And, as you know, the net has been installed around the intake. It is to reduce the fish impingement. This will be discussed later today as a matter of fact.

**MEMBER BARRIAULT:** M'hm.

**MR. RZENTKOWSKI:** And because of the algae which -- deposition itself on the net, the flow through the net is being significantly -- could be significantly reduced and, as a result, affect the conventional site -- the conventional site only -- of the reactor.

This may affect the turbine performance and, because of that, the reactor was proactively reduced in power to approximately 60 percent full power.

**MEMBRE BARRIAULT:** And why does it affect only Pickering B?

Is the cooling system different on Pickering A?

**MR. RZENTKOWSKI:** The cooling system is different because, for Darlington, it's further extended into the lake. It's further from the shore.

So this probably has something to do with

that.

And also, I think the local water temperature, the water depth, probably the current, there's many issues which can contribute to the sediment of algae.

I think we should get back to this question because, later today, we'll have a chance to show a video of the net and how the net is being cleaned from the algae sediments.

I was just informed this also happens at Gentilly-2 station.

**MEMBER BARRIAULT:** At Gentilly?

**M. RINFRET:** Oui, bonjour. François Rinfret.

Cette condition-là arrive à quelques reprises pendant la saison, spécialement pendant les saisons où les eaux sont plus basses avec la prolifération de certains types d'algues.

C'est connu et les opérateurs s'en attendent. Les opérateurs prennent les mesures en chantier avec des nettoyages parentaux des entrées d'eau.

Alors, c'est une condition d'exploitation, je dirais, récurrente et lequel le titulaire se prémunit.

**MEMBRE BARRIAULT:** Gentilly n'a pas de filet, par exemple, hein, pour empêcher les ---

**M. RINFRET:** Non, Gentilly n'a pas de filet. Il n'y a pas de mesures -- il n'y a pas de mesures présentement pour la capture de poissons là à l'entrée.

**MEMBRE BARRIAULT:** Le problème dure combien longtemps normalement?

**M. RINFRET:** De quelques heures à quelques jours.

Pour les détails, si jamais -- ils sont disponibles. Le personnel de G-2 pourrait en parler pour l'avoir vécu assez souvent.

**MEMBRE BARRIAULT:** Est-ce qu'on pourrait demander à Gentilly de venir à l'aide?

**M. DÉSILETS:** Mario Désilets.

Pouvez-vous me préciser votre question?

**MEMBRE BARRIAULT:** La question est: Combien longtemps dure la période de prolifération d'algues qui, si tu veux, modère l'entrée d'eau pour refroidissement de la Centrale?

**M. DÉSILETS:** Marion Désilets.

On a deux périodes où on a des problématiques avec les algues. Il y en a une au printemps puis, souvent, on en a une à l'automne.

Et ce qui nous amène à baisser la puissance c'est quand on commence à nettoyer nos boîtes d'eau, bien, il arrive que on en ait plus qu'une en problème et puis,

là, quand on est obligés d'en adresser deux, on diminue la puissance parce qu'on a une capacité de refroidissement qui est un peu diminuée le temps qu'on nettoie.

Un coup que c'est nettoyé, bien, on remonte la puissance.

Ça été conçu de cette façon-là.

**MEMBRE BARRIAULT:** Ça fait partie de la planification?

**M. DÉSILETS:** Oui.

**MEMBRE BARRIAULT:** O.k.

Pickering, is this part of the planning also to have de-rating of the reactor to accommodate for algae?

**MS. SWAMI:** Laurie Swami.

The algae is a known phenomenon around the Pickering sites and, for many years, we we've been monitoring that.

We do have procedures in place should there be an algae -- we call it "an algae run" where there's more algae coming into the site. We have procedures in place so that operators will reduce power in order to mitigate that affect so there will not be an impact on nuclear safety and that's part of the process that we've had for many years now.

**MEMMBER BARRIAULT:** Okay, thank you.

Thank you, Mr. Chairman.

**THE CHAIRMAN:** Okay.

Ms. Velshi?

**MEMBER VELSHI:** This is for Staff. It's a follow-up to your comment on the strike action and the solidarity support.

I'm sorry, I missed -- which sites have access blocked and at what point does that become a significant concern?

**MR. RZENTKOWSKI:** Actually, all Ontario sites have the access partially blocked.

It's not completely blocked, simply the flow of cars through the gate is significantly reduced. I understand that one car can pass in approximately 20 seconds which is definitely not the normal flow of traffic.

And from that standpoint, even ours, the CNSC staff is still waiting in traffic to get to the site.

At what point this may have a safety significance? I think at the point when the operator cannot maintain the minimum shift complement.

But of course, at this point in time, because we are very early into the strike action, there is no concern and I'm sure that there are special procedures which our licensees can deploy in order to avoid any



critical situation at the sites.

Once our staff will get the access to the site, we'll follow up on those points.

**THE CHAIRMAN:** Any other?

Dr. McDill?

**MEMBER McDILL:** Thank you.

Where is Point Lepreau now in terms of power?

**MR. RZENTKOWSKI:** Point Lepreau is critical so that means that the power is below .1 percent full power.

**MEMBER McDILL:** And what's the ramp-up anticipation?

**MR. RZENTKOWSKI:** In order to increase the power, Point Lepreau has to apply for the release of the hot point to allow them to increase the power beyond .1 percent.

We expect the request probably later this week but this has to be confirmed with New Brunswick Power management.

**MEMBER McDILL:** Thank you.

**THE CHAIRMAN:** Monsieur Tolgyesi?

**MEMBER TOLGYESI:** Merci, monsieur le président.

At Bruce A, you were saying:

"The status of work on Unit 2 that due to a ground fault resulted in some damage to the generator. No nuclear safety implications but repairs or replacements will delay the return of this unit to the service."

What kind of delays you are talking about?

**MR. RZENTKOWSKI:** A replacement generator has been ordered from Siemens who is the manufacturer of this generator so I understand it will take at least two months to get this replacement unit at the site.

Therefore, another option considered by Bruce Power is to take the generator from Unit 4, I believe, which is scheduled for a long maintenance outage simply in order to allow Unit 2 to return to service.

This may be confirmed by Mr. Frank Saunders from Bruce Power who is in the room.

**MEMBER TOLGYESI:** Is Mr. Saunders here?

**THE CHAIRMAN:** No, he is not but he will be in later on.

**MR. HAWTHORNE:** This is Duncan Hawthorne, for the record, Bruce Power.

We were going to answer this in the update but, in terms of the question that you asked, we developed an electrical fault in the stator of Unit 2 which was a

manufacturing defect.

We actually removed that stator and we intend to rebuild it but, in order to expedite the return to service of Unit 2, we're going to remove the stator from Unit 4 which is currently on a planned outage.

This weekend, we'll move that stator into position on Unit 2 and commence a rebuild and, when we've repaired the stator on -- that came from Unit 2, we'll install it in Unit 4.

**MEMBER TOLGYESI:** So it will be some delay on Unit 2? For how long?

**MR. HAWTHORNE:** Yeah, we've said publicly we think that we are -- we will return -- some of this is commercially sensitive but we said we will return these two units into operational duty in Q3, so around the end of September time.

**THE CHAIRMAN:** Any other?

I just have one question on Bruce B.  
Remind us again, I don't remember what:

"Unit 6 de-rated by 2 percent to  
prevent governor valve oscillation."

Somebody remind me what this is? Again,  
what it's about?

**MR. RZENTKOWSKI:** The 'governor valve' is  
the main valve which directs the steam flow into the

turbine.

So the steam drag on the turbine is really enormous and, because of that, sometimes it develops some oscillation -- this is so called "valve chatter" -- which again affects the controller of the valve. It's like a feedback loop and, because of that, sometimes to avoid this situation one has to reduce the power of the reactor.

**THE CHAIRMAN:** It sounds to me though that that's a serious issue when -- that's reducing power and, again, in my little layman's view, anything to oscillate require attention.

So is it being fixed or going to be fixed?

Maybe Bruce Power can answer that.

**MR. RZENTKOWSKI:** Yeah, maybe Bruce Power can respond to this question but this is a known phenomenon. This is not unique to Bruce Power, this is not unique to this unit.

**THE CHAIRMAN:** So is de-rating of 2 percent going to be a permanent de-rating?

**MR. RZENTKOWSKI:** Not really because it reduces generally the flow of steam to the turbine and this is sometimes sufficient to get out of this critical flow which may affect the behaviour of the valve.

**THE CHAIRMAN:** So it's a permanent de-rating?

I'm trying to understand whether this is an ongoing thing or it's going to be fixed.

**MR. RZENTKOWSKI:** For the time being, this de-rating is in place for quite significant period of time.

How this can be resolved? I think there is -- definitely, there is the means of resolving this but I think it requires some underlying research.

**THE CHAIRMAN:** Okay.

Does Bruce Power want to comment or leave it like this?

**MR. HAWTHORNE:** I'm sorry I came in now!

Yeah, the reality is that governor valve oscillation, nuclear plants, non-nuclear plants, fossil plants, is a standard situation here as well.

When you have governor valve problems, you would reduce the power going into the turbine generator to balance out.

You know, it's done in every turbine, in every plant, whether it's nuclear or otherwise.

So we have a problem with a control system and governor valve and reducing reactor power is a simple way of dealing with it. It's not -- it doesn't have any safety connotations, it's a standard operating regime.

I wouldn't consider it to be in any way,

you know, of safety interest, to be honest. It's just a conventional steam flow management situation.

**THE CHAIRMAN:** My question was -- I accept that, the only thing I wanted to know whether you accept the 2 percent rating -- downrating is going to be there permanently rather than fix it?

**MR. HAWTHORNE:** No, no, not at all.

It's just a -- it's an access issue. It's an access to go and fix -- to deal with that.

No, no, it's not -- sorry, I'm trying to make this simple but it's -- you know, it's a component failure, it's a commercial loss where we de-rate to deal with it.

So, obviously, when we get an opportunity, we're going to correct it.

**THE CHAIRMAN:** Okay, thank you.

Any other questions? Okay, thank you.

**7. Update on an item from a  
Previous Commission  
Proceeding**

**7.1 Ontario Power Generation,  
Pickering A and B Nuclear  
Generation Stations: Update on**

The progress for meeting the fish  
Impingement reduction targets

**THE CHAIRMAN:** The next item is update on some item from previous Commission sitting. And as commented earlier this year during Commission meeting, there was -- we were promised an update, Ontario Power, the OPG Pickering A and B Nuclear Generating -- Generation Station on the progress of meeting fish impingement reduction target. This is outlined in CMD 12-M44.

And I understand that -- it says -- Ms. Swami, because it says here Pierre Tremblay.

So I guess, Ms. Swami, you are the one that's been relegated to bring the update? Please proceed.

**12-M44**

**Presentation from Ontario**

**Power Generation**

**MS. SWAMI:** Given the good opportunity.

Good morning. My name is Laurie Swami, Vice-President of Nuclear Services at OPG. With me today is Raphael McCalla, our Director of Environment Operations Support.

OPG has been before the Commission on a number of occasions to provide updates on our progress to address fish impingement and entrainment at the Pickering Station.

As you know, OPG has installed a fish barrier net to address this issue. We are pleased that the net is effective at reducing fish impingement.

To assist in visualizing the scale of work that OPG has and continues to perform, we have brought today a video that will provide insight on all of the work that is required to maintain this net.

You will see that it's not a simple matter of placing the net into the lake. There is also a significant amount of maintenance, monitoring and assessment activities.

Following the video, Mr. McCalla will provide additional updates on the status of our fish loss mitigation program.

Thank you.

**(VIDEO PRESENTATION/PRÉSENTTION DU VIDÉO)**

**MR. McCALLA:** Good morning. My name is Raphael McCalla, and I'm the Director of Environment Operations Support.

In addition to the work we've highlighted in the video you've just viewed, I'm here today to provide



you with an update on fish impingement, entrainment and thermal plume work completed in 2011.

To verify compliance to the impingement target, OPG developed a monitoring system with input from various regulatory agencies, including the CNSC, Department of Fisheries and Oceans, Ministry of Natural Resources and the Toronto and Region Conservation Authority.

In 2010, compliance was monitored by two methods, screen house bin monitoring, and sonar.

Screen house monitoring of impingement is a physical count of impinged fish biomass from the condenser cooling water debris collection systems by trained individuals who are competent in identifying Ontario fish species. The number, species, length and weight of the fish is recorded. This type of monitoring allows for a comparison to historical conditions but does not account for recent increases in the local fish population.

OPG also used a sonar system to assess the -- the amount of fish on both sides of the net. This work is important because it assesses impingement relative to fish population in the lake and provides the best indication of the effectiveness of the net.

In 2011, similar to 2010, we completed screen house bin monitoring.

In addition to the impingement target, OPG was required to develop plans to ensure that there is no population impact on northern pike and brown bullhead. As you can see from the graph, the barrier net is highly effective in protecting brown bullhead, reducing impingement by over 98 percent.

OPG has not seen the same impact on northern pike, a species that is primarily impinged during the winter when the net is not deployed.

In order to understand any impact to the pike population from our operations, OPG has funded a pike population study using tags with the Toronto and Region Conservation Authority, and monitoring has shown that no tagged fish have been impinged.

Historically, Pickering impinges about 60 pike each year. To date, there is no evidence that OPG is having an impact on the lake-wide pike population.

While a reduction in impingement was not directly achieved, OPG has alternative projects to offset impingement. OPG partnered with the Toronto and Region Conservation Authority in the creation of pike habitat, which will be discussed on the next slide.

Although OPG has concluded that the operation of the station is having no negative impact on the lake-wide northern pike population, we have worked

with the Toronto and Region Conservation Authority to create new pike spawning habitat in Duffins Creek.

The photograph on the left shows channels which were dug into the shoreline of the creek to provide spawning areas in the spring and nursery habitat later in the year.

The photograph on the right is of the same area with vegetation grown in.

OPG was concerned with the impact algae was having on the net operation in 2010. When algae builds up on the net, it would cause it to sink, allowing the passage of fish into the intake channel.

To prevent this effect, we undertook a \$1.4 million improvement to the net by adding a second skirt in July of 2011. This was very effective, essentially stopping all impingement once installed.

The graph in the bottom right-hand corner of this slide shows the effect the modification has had on reducing impingement.

If you compare the 2011 actual to the 2010 actual looking specifically during the periods from June to November, you will see that the slope of the 2011 graph is significantly less than the 2010. That is a -- a clear indication of the effect that the modification has had.

As shown in this graph, the overall

effectiveness of the fish diversion system when comparing impingement data collected from the screen house monitoring to historical values were 88 percent and 84 to 90 percent in 2010 and 2011, respectively.

In summary, the fish diversion system is 98 percent effective at reducing fish impingement when deployed.

In addition to the impingement reduction objective, OPG was actioned to reduce entrainment by 60 percent by the end of 2012.

By definition, entrainment is the process by which aquatic organisms suspended in water are pulled through a pump or other device and discharged back into the lake.

The impact of OPG's operations on entrainment represents approximately five kilograms of age one fish each year.

OPG undertook a review of technical options and concluded that there is no practical method available to reduce entrainment.

Based on this conclusion, OPG proposed several operational and mitigation options to meet the intent of the objective. This includes execution of the approved business plan which will see flow reductions due to Unit 7 load shifting and Units 5 and 6 being taken

offline starting in 2018.

OPG has also contributed 1.25 million over five years to the Atlantic Salmon Restoration Project dubbed "Bring Back the Salmon".

This project includes habitat restoration in Duffins Creek, which would benefit all fish species and stocking of salmon.

OPG has taken the necessary steps to provide adequate protection for the environment based on the large body of work we've completed over the past number of years.

OPG is ahead of schedule with respect to meeting the CNSC directive for fish impingement and entrainment and we are confident, based on performance to date, that our mitigative measures are meeting the objectives.

OPG has demonstrated that the fish diversion system is capable of achieving greater than 80 percent reduction in impingement. There are no population impacts to species of concern and we have implemented projects which meets the intent of the entrainment reduction target. We therefore conclude that the conditions of this Action Notice have been met and we are working with CNSC staff to develop acceptable compliance criteria.

In 2008, OPG was directed to conduct studies to understand the effects of the Pickering B thermal plume on round whitefish. A methodology was developed by OPG in consultation with the CNSC and Environment Canada and a body of work completed in support of this effort.

OPG completed all the deliverables as requested by the CNSC and Environment Canada, including an assessment of mitigation options. We are satisfied that mitigative measures requested by the regulatory agencies following a review of our assessment report can be implemented to protect round whitefish, thus meeting the criteria in this Action Notice.

OPG is currently working with Environment Canada and CNSC staff to develop compliance criteria.

In conclusion, OPG believes that we have met the requirements of CNSC Action Notice 2008-04-13 and 04-14 and, thus, this is our final update in this forum on fish impingement, entrainment and thermal plume unless otherwise directed.

This concludes the presentation on fish impingement, entrainment and thermal plume, and I'll be happy to take any questions you may have at this time.

**THE CHAIRPERSON:** Thank you.

Before we get into the questions, I

understand that we have Nardia Ali from Environment Canada who is here and available and able to help us along on this file.

I don't know if you want to say a few words before we start questioning. Bottom line question is, what do you think about all of this?

**MS. ALI:** Hi. Nardia Ali, for the record.

I don't have anything to add to what Raphael said except to agree that we have been working with OPG and the CNSC to come up with compliance criteria to satisfy all the agencies that the impacts to round whitefish can be mitigated.

And then I'll stay if there are any questions regarding that.

**THE CHAIRPERSON:** Thank you.

**MS. ALI:** Thank you.

**THE CHAIRPERSON:** Who wants to go?

Dr. McDill?

**MEMBER McDILL:** Staff, you're not going to make a presentation on this?

**MR. RZENTKOWSKI:** The presentation from staff, sorry?

**MEMBER McDILL:** I'm going to ask if you have any comments, but I'm surprised you didn't come with a deck of your own.

**MR. RZENTKOWSKI:** No, we don't have a deck on our own, but we have many comments.

And maybe -- maybe just to open up, I would like to state that I think this is a very good example of the regulator and the industry working together to protect the environment.

And as a matter of fact, Mr. Jammal, the CNSC Executive Vice-President, and I, we had a chance to inspect this net earlier this spring. And we are impressed by the extent of effort directed towards resolution of this problem.

And we are also glad to report that the criteria established in our Action Notice, in fact, have been met.

As the next step, we will develop a set of compliance verification criteria for future regulatory oversight of the net effectiveness.

In terms of specific technical details, Mr. Mike Rinker, the Director of the Environmental Impact Assessment/Risk Assessment Division, is present here in the room and is available to answer any questions the Commission may have.

**MEMBER MCDILL:** So you are satisfied that the Action Notice can be closed, subject to compliance?

**MR. RZENTKOWSKI:** Based on the -- on the



results reported to date, yes, we are satisfied.

**THE CHAIRPERSON:** I think you want to add something to that?

**MR. RINKER:** Mike Rinker. I'm the Director of the Environmental Risk Assessment Division.

There's three items that OPG has been addressing. There's that related to impingement, which the net is in place for. There is an issue related to entrainment, which is, you know, eggs and smaller fish that would pass through the entire system. And then the third issue related to thermal releases.

We're very happy with the performance of the net and the investment that OPG has made for protection of the environment and we are looking forward to developing very clear and simple compliance criteria for the impingement target.

Similarly for thermal releases, there's been adequate study to indicate that the plant cannot be redesigned in any feasible way to mitigate further thermal releases and that there are some ways that OPG can both monitor and reduce whatever impact they can for thermal releases.

We've worked with Environment Canada on that one, so we'll be moving to compliance criteria.

A third one is entrainment. And what OPG

is proposing -- has proposed recently is for us to consider the good job they've done on impingement to be taken into account for removing entrainment from an issue.

And we have not agreed to that yet. We're still working on that issue.

**MEMBER McDILL:** So OPG's perhaps statement that this is their final submission may not be complete? There may be something more on entrainment?

**MR. RINKER:** Mike Rinker, for the record.

For entrainment, what -- I guess what we're looking for and what we got from advice from the Department of Fisheries and Oceans was that if there is no feasible mitigation measure for entrainment, then some sort of offset could be accounted for.

One of those OPG is suggesting is the restocking of the salmon program. That's an excellent program. It's Atlantic salmon, our species of fish at risk, and they're putting excellent resources to help re-establish that.

But is that equivalent to reducing the impacts due to the entrainment? We are asking OPG to explain that to us in more detail.

We're also asking OPG to consider the size of the offset they are doing at Duffins Creek. Is that .2 hectares sufficient to account for the entrainment losses

and the pipe losses?

From our current view, they need to look at that a little bit harder and to work with the Toronto Region Conservation Authority to come to terms is that sufficient to take entrainment off the table.

**MEMBER McDILL:** Perhaps OPG would like to comment on those questions.

**MS. SWAMI:** Laurie Swami, for the record.

Just in response to your first comment, we do plan to continue to work with the CNSC staff. Our proposal is that we would not necessarily have to come back to report on impingement and entrainment in this forum. Not that we would no longer be corresponding with the staff to meet the compliance criteria as established.

I think Mr. McCalla will respond to the .2 hectare mitigation that we already have in place and the value of that to the environment.

**MR. McCALLA:** Raphael McCalla for OPG.

So as we stated earlier, we have undertaken a .2 hectare restoration effort in Duffins Creek. We've been advised by CNSC staff that perhaps we need to do additional work in this area. And we will be working with CNSC staff as well as the Toronto Regional Conservation Authority to come up with any additional mitigation that we need to put in place or offsets that we need to put in

place to compensate for any impacts that we're working.

**MEMBER McDILL:** Does Environment have anything to add?

**MR. RINKER:** Mike Rinker, for the record. Just explain, Environment Canada is responsible for Section 36 of the *Fisheries Act*, which is release of deleterious substances, so the thermal releases is their part of that file.

**THE CHAIRPERSON:** Thank you.

Mr. Tolgyesi.

**MEMBER TOLGYESI:** Merci, monsieur le président.

I understand that entrainment is much smaller effect as impingement, and I think you were trying to say that impingement performances will be sufficient to not concentrate too much on entrainment.

You were saying that you reduced entrainment by 60 percent. Is it true it was achieved?

**MR. McCALLA:** Raphael McCalla, for the record.

OPG has concluded that we have offset -- we put in additional offsets to mitigate for any intent that we're having with respect to entrainment.

We're not saying that we've actually done a direct reduction of 60 percent. However, we have -- our

position is that we have put in other measures which we think are equivalent to the impact that we're having.

**MEMBER TOLGYESI:** Because in your presentation on page slide -- what's the number -- 1, you are saying that demonstrate that OPG has achieved a target of 80 percent reduction in impingement and 60 in entrainment.

So that's -- that's what you are stating.

**MS. SWAMI:** Laurie Swami, for the record.

What we're stating is that we believe we've met the intent of the requirement to achieve a 60 percent reduction. We look at a number of factors when we consider that statement. One of them is the survival of eggs through the cooling water system.

We also look at the habitat restoration projects that we have underway which offsets any losses as mentioned in the presentation. There's a very small mass of fish that are actually impacted by entrainment. And so we see those two effects as being sufficient to offset that entrainment loss and achieve that intent of the action notice.

**MEMBER TOLGYESI:** Staff have some comments?

**MR. RINKER:** Mike Rinker, for the record.

We are aware of OPG's position. What I'd like to state, though, is that based on advice from the

Department of Fisheries and Oceans Canada, which was supported by, you know, guidance from the -- from south of the border, the EPA guidance on what are the appropriate targets for reducing impingement and entrainment is that there were two targets that -- there was a target of 80 to 90 percent for impingement -- not just 80, but it was a range -- and 60 percent for entrainment.

And I think doing a very good job, which OPG has done, on impingement does not necessarily mean that we need -- we can say entrainment can be removed. There are two targets, two separate targets made.

And so, for entrainment, it suggested that there are some offsets that could be considered for equivalent to protecting fish. And those are the habitat offsets in Duffins Creek and restocking of Atlantic salmon.

I think everyone agrees that Atlantic salmon isn't an entrainment species, but that -- but I think we're not looking for a species versus species assessment. But it hasn't been shown -- demonstrated to us that that is sufficient to meet that 60 percent target.

**MEMBER TOLGYESI:** So you'll continue work on entrainment?

**MR. McCALLA:** Yes, so OPG -- Raphael McCalla, for the record.

So OPG's position is that we're currently working with the staff -- the CNSC staff to develop this compliance criteria which would satisfy that condition.

**MEMBER TOLGYESI:** One more question, kind of technical. I saw that somebody -- in your video, somebody was sawing that -- sewing that steel mesh. Is this repair work, you -- just to simply handling the mesh when placing and removing or are there some other threats or other causes?

**MR. McCALLA:** Raphael McCalla, for the record.

The -- what you observed is an ongoing operation. There are divers that are in the water four times a week, actually maintaining that net. And as part of that exercise, when they go through the exercise of removing algae, if there are any small holes that they observe, they actually mend it in place.

So that's exactly what you're actually observing in that video. It's not that they're actually sewing or attaching the actual panels per se, but simply repairing small holes as they observe them through their maintenance activities.

**MEMBER TOLGYESI:** So the question is more that those holes are due to cleaning, maybe, you know it's high pressure cleaning I think what you have there or to

some extent the pressure and -- because no other mechanical reasons why the net should be broken?

**MR. MCCALLA:** Raphael McCalla, for the record.

The holes that you're basically observing is strictly due to normal wear and tear on the net. And that could be from various -- for various reasons.

I don't have a good assessment as to whether or not it's the pressure washers having any negative impact on the net itself. I'd simply state it's just normal wear and tear.

**THE CHAIRMAN:** Okay, thank you.

Monsieur Harvey, sorry.

**MEMBER HARVEY:** I just want to thank OPG for the presentation that they gave us, very good idea of the work done and the results obtained.

But I just have one question to the staff. OPG mentioned that they hope not to be obliged to come back and report on that in front of the Commission. And my question is will the notice be closed or not?

**MR. SANTINI:** Miguel Santini, for the record.

Certainly, we'll provide an update to the Commission next year for the licence renewal on the status of this issue. I think it was mentioned several times



that we are developing compliance verification criteria to ensure that the efficiency of the net is maintained. In principle, we are satisfied with OPG's work. They have applied due diligence.

But as mentioned by my colleague Mike Rinker, there are some residual issues that need to be still resolved. And we will provide an update to the Commission at licence renewal next year.

**THE CHAIRMAN:** I assume that annual reports will occur and the staff is presumably at liberty to highlight any issue at any time on any subject that they wish. And I'm sure that should there be some difference of opinion, they will be highlighted in their normal of annual reports, right? At least.

**MR. RZENTKOWSKI:** Yes, it will be highlighted because this is currently becoming a normal part of our regulatory oversight. Up to this point in time, this was a special project.

We reacted to the situation which happened in the field. We knew we have to find the corrective measures and put them in place as soon as possible. This took place. Now, we simply exercise our regulatory oversight in order to assure compliance with the targets established.

**MEMBRE HARVEY:** Merci.

**MEMBER VELSHI:** If you turn to slide number 6, this is a question for OPG, this is on your impingement performance. And I think I heard you say that you got 98 percent effectiveness. But as I look at these numbers, I don't see the 80 percent being met going from over 18,000 to about 4,000. So am I missing something here?

**MR. McCALLA:** Raphael McCalla from OPG, for the record.

So there are three different methods that are utilized in arriving at the assessment of performance. The assessment criteria was established and submitted to CNSC staff for review to ensure that there was alignment with respect to how we would go about assessing performance.

One of the things that we look at is strictly the level of impingement that we see in our bins in relation to the baseline year, which was 2003-2004. So if you do a comparison between the 18,000 in the baseline year and the over 4,000 in 2010, if you do a comparison between those two, what you would actually find is that your level of impingement represents 78 percent.

However, what this does not take into account is the fact that in that comparison, you're just looking at impingement without taking into account the performance of the net. The net was not present in 2003-

2004, so there was no opportunity to offset based on the quantity of fish that potentially could have been impinged.

So when you take into effect the effectiveness of the net, that actually increases the reduction in impingement and that's how we come about our assessment of it being 88 percent. So you have to actually take into account the net availability. You have to take into account the efficiency of the net as well as the level of impingement that you're seeing in your bins to arrive at an overall effectiveness.

So the net by itself is 98 percent effective, when we put that net out over the entire year, including the period when the net is not available, our overall effectiveness in terms of reduction in impingement is at 88 percent for 2010.

**MEMBER VELSHI:** Let me ask this very simply to the staff, has the 80 percent target been met then?

**MR. RINKER:** Mike Rinker for the record.

We can confirm that the -- the target was 80 to 95 percent; they've met that. And now we're looking for a compliance criteria that would be more based on is the net in place for the appropriate amount of time?

**MEMBER VELSHI:** And -- and was there timing for getting those compliance criteria in place?

**MR. SANTINI:** This is Miguel Santini for the record.

We -- we have established a new action item on OPG after closing the two mentioned in the presentation to establish these compliance criteria.

Specifically what -- what OPG has requested and we have agreed to is to reduce the immense amount of work related to monitoring the -- this greenhouse counting and measuring fishes.

So basically the compliance criteria will have to be developed in terms of it has been -- what percentage of the time has the net been fully available and how often they are going to go and check and -- and how many breaches have they found, et cetera.

Do we expect to have those developed before the end of this year?

**THE CHAIRMAN:** Again, I am -- I'm sorry to -- to get back to this chart Ms. Velshi raised.

I'm very simple, you know, so you should give us simple representation. You're using 98 percent; I don't see 98 percent. I see -- I see 18 -- little bit over 18 goes to 4000. Nobody's telling that this is a partial year, not a full year.

So you got to explain. If you want -- if you want to demonstrate these kind of numbers, you've got

to show them somewhere.

Which brings me to the question -- and I've asked this question many, many times, is it really more efficient to yank the net for the winter and then re-install it rather than try to find a way of leaving it in and getting the 98 percent rather than the 80 percent?

**MR. McCALLA:** Raphael McCalla from OPG for the record.

So I do apologize if I've made -- if I've tried to explain this and it's -- it's perhaps a little bit complex to understand. I'll try to do a little better at this for you.

The point that I'm trying to make is that there were two methods utilized to actually assess performance of the net.

One was simply to look at the bin which you -- it's a physical count in terms of what you actually see. So that's a comparison from 2003 to 2010 and 2011. And that's what you're actually looking at when you look at this graph.

However, there was a second method used and that was -- we did sonar analysis across either side of the net as indicated in the presentation to determine the effectiveness of the net itself.

So when you take that into account,

recognizing the quantity of fish that is actually trying to traverse the net versus how much we actually see in the bins, and you take that effectiveness into account, you get a higher level of reduction.

**THE CHAIRMAN:** Okay, so given that it's so effective, you still feel that by taking it out in winter, so to speak, you're knowing that you're reducing your performance here, but it's still worthwhile for operational reasons?

**MR. McCALLA:** Raphael McCalla for the record.

So there are three reasons why we take the net out.

Well, let me answer your first question. You're correct in that when it's fully in place the effectiveness is around 98 percent. The portion of the year that it's not there actually results in a reduction so we end up somewhere south of 98 percent and what we've seen in 2010 that was at 88 percent and in 2011 84 to 90 percent.

The reason we take the net out is three reasons.

One, to ensure that we maintain the -- of the integrity of the net.

We cannot leave it in. It would fall apart

due to ice loading on the net it would break apart and that may very well impact our equipment that we need to actually provide cooling to our units. So that's one reason.

The second reason is that there -- during the winter months, it's difficult for folks to work out on the lake.

And the third reason is that there are no -- there's no rescue capability for our staff working out there after the beginning of December. There's no Coast Guard support if we're required to provide any safety -- or meet any safety concerns that may occur during our operations.

So those are the three reasons why we take it out. And we believe that the approach that we follow to date is the most effective approach that we can deploy using this system in order to mitigate for any impacts that we are having.

**THE CHAIRMAN:** Okay. Thank you.

Dr. Barriault?

**DR. BARRIAULT:** Thank you, Mr. Chairman.

First of all, I'd like to say congratulations for what you've accomplished what you've done to date, really it's -- I think it's remarkable.

But my first question will be to

Environment Canada.

Are we looking at bringing this kind of technology now to other generating stations who -- I -- and I don't only -- don't only mean nuclear but other thermal hydro as to whether they have the same problems?

And if they have the same problems, are we looking at having them correcting this?

I guess the reason why I'm asking that is because I wouldn't want the -- for OPG to feel, I guess, slighted by the fact that we're asking them to do this, and obviously they're costs involved in this.

So perhaps if you could just expand, see?

**MS. ALI:** Hi. I'm Nadia Ali, for the record.

I just want to say again that Environment Canada is concerned only with Section 36 which deals with deposited ulterior substance.

For the fish impingement and treatment, I'll pass that to Mike Rinker to comment on that.

But with -- with regard to -- you know -- thermal impacts, we would be looking at that at all -- at all nuclear power stations.

Thank you.

**MEMBER BARRIAULT:** Thank you.

**MR. RINKER:** Mike Rinker for the record.



Maybe just to put into some context -- the Pickering plant is -- is not designed in the same way as, for example, the Darlington plant, and the mitigated impingement losses now are about on -- at Pickering, are about the same as they are at Darlington now.

So I wouldn't say that would want to apply a technology across the board. We would do it based on a risk, and two years ago -- three years ago, Pickering was impinging a lot more fish, much more fish, than any of the other nuclear power plants.

**MEMBER BARRIAULT:** I know. I understand that.

But what I'm saying really is that obviously we're going to establish our minimum criterias as to what's permitted, what's not permitted, if I can say that really.

And if we're going to do this then are we going to start looking at other plants? And not just nuclear, I think we have to look at thermal generator stations because obviously they've had problems. We have to look at hydro because you've got fish coming through the turbines all the time.

So, I'm wondering more where we're going with all of this, I guess, is what I'm saying. And I'm not asking for crystal ball gazing but at least some kind

of a -- an opinion on this.

**MR. RINKER:** Mike Rinker for the record.

I think that's important, and OPG can further elaborate.

However the net performance and the experience from the use of this net was based on OPG's experience at other power generating stations, not nuclear power generating stations.

**MEMBER BARRIAULT:** Thank you.

This ---

**MS. SWAMI:** Laurie Swami for the record.

When we first entered into looking at mitigation techniques, we did a full review of operating experience from other generating facilities, not just nuclear facilities.

The type of net that we have installed is something that we based on that review of -- of experience in other jurisdictions, not just in Ontario.

And really the -- the targets that were set were based on what we have seen in the U.S. as part of the process that's going on in that -- in those areas.

Our other facilities, we do look to mitigate fish loss in different ways. It would not necessarily be the same as a fish net, but we would look at other techniques.

And as we've described Darlington -- or -- as Mr. Rinker described Darlington is an excellent performer in this area and that's because as we progress through the design phase we have implemented better techniques for addressing fish loss at the facilities.

And that's across our company, it's not just within nuclear, but it's our thermal stations.

And we've to other mitigation at our hydroelectric facilities as well.

And we work closely with DFO, Department of Fisheries and Oceans, to ensure that meets their requirements for those operations.

**MEMBER BARRIAULT:** Thank you.

Just one more question, Mr. Chairman.

**THE CHAIRMAN:** On that point, if memory serves, our friends to the south have complemented OPG at one time -- that's recently -- about some of the mitigation activity that they are reporting.

I can't remember when the report was arguing that some of the power station in the south should put in some of those same technologies in their stations.

So, I guess the question is there a technology intellectual property here that can be shared and, maybe, commercially exploited somewhere else?

**MS. SWAMI:** OPG, Laurie Swami for the

record.

We always look for opportunities to sell our services, of course. However, I think the technique is well established in the industry and so it's available to others should they choose to do that.

Different situations require different types of technology and it's got to be site-specific and address the impingement concerns for that particular facility.

**THE CHAIRMAN:** Thank you.

Dr. Barriault?

**MEMBER BARRIAULT:** Thank you Mr. Chairman.

Just to clarify another point, really. We heard earlier that because of algae bloom we've had to de-rate stations and I'm not sure if the net had an impact on that or not. Has there been any performance impact from this net on your reactors?

**MS. SWAMI:** Laurie Swami for the record.

The net itself has not impacted our operations. The advantage the net would have is it could act as a barrier for some algae entering the intake channel. We have seen some improvement but we have not quantified that improvement. So when there is a large algae influx, we still take the preventative measures to ensure that we're not affecting the nuclear safety side of

the plant and that's obviously prime concern for operations.

**MEMBER BARRIAULT:** So this net really has had no negative impact, what I'm hearing, on performance?

**MS. SWAMI:** That's correct.

**MEMBER BARRIAULT:** Okay, thank you.

Does CNSC concur with that?

**MR. RZENTKOWSKI:** It's difficult for us to comment based on the information we have because our judgement is restricted only to monitoring the reactor power, in this case. So if there's reduction in the reactor power, we know we have a problem and we try to assess the extent of the problem.

But, how I mentioned before, this affects only the conventional side of the plan. So it's an economic not the safety concern.

**MEMBER BARRIAULT:** But I thought I'd heard earlier this morning that a net had an impact on the algae coming in and causing the de-rating and that's why I'd asked the question to Hydro-Québec that they have no net, if they had the same problem; so, maybe just a little bit of clarification here, because I was left confused?

**MR. RZENTKOWSKI:** The flow of water into the intake can be reduced by the net because, as you have seen on the movie, it can be really almost, almost blocked

by the sediment of algae.

And, nevertheless, there's a positive impact as well because the algae run cannot really manifest itself inside the cooling system of the reactor. So, we have to balance the positive and negative impacts. Which one wins, I'm not quite sure to be honest.

**MEMBER BARRIAULT:** Thank you.

**MS. SWAMI:** Laurie Swami, for the record.

If I could just follow-up.

The net was specifically designed to not have an impact on our operation so it has been established to ensure that there is continuous flow to the plant.

**MEMBER BARRIAULT:** So the size of the mesh is appropriate to allow the water flow?

**MS. SWAMI:** Absolutely, that is correct.

**MEMBER BARRIAULT:** Yeah, thank you.

Thank you, Mr. Chairman.

**THE CHAIRMAN:** Okay, thank you.

Any other questions?

So, let me again just compliment OPG for particularly some of the work they've done on fish impingement.

I also would like -- I would hope that we'll remember that this plant is being running for many, many years with no mitigation and they only have eight

years to go, so I would hope that we can find for the remainder eight years -- we'll not get into eight year negotiation of some remaining mitigation.

Let's come up with some practical, doable, useful kind of a lesson learned that we can implement for the remainder eight years for this operation. And, we will look forward to seeing what they are. So, thank you all for this.

We will take 10 minutes, a break here. So, we will reconvene at twenty-five to eleven. Thank you.

--- Upon recessing at 10:30 a.m./

La réunion est suspendue à 10h30

--- Upon resuming at 10:43 a.m./

La réunion est reprise à 10h43

## **8. Information Item**

### **8.1** *CNSC Staff Integrated Safety*

*Assessment of Canadian Nuclear*

*Power Plants for 2011(2011 NPP*

*Report)*

**THE CHAIRMAN:** Okay, we're back.

And, the next item on the agenda is the

CNSC staff integrated safety assessment of Canadian nuclear power plants for 2011 as outlined in CMD 12-M40 and 12-M40.A.

Marc? You want to say some few words here?

**12-M40 / 12-M40.A**

**CNSC Staff integrated Safety**

**Assessment of Canadian Nuclear**

**Power Plants for 2011 (2011 NPP Report)**

**MR. LEBLANC:** Thank you.

A notice of public participation was published on June 18<sup>th</sup>, inviting the public to comment in writing on this meeting item. A revised notice was published on June 26<sup>th</sup> to add the hyperlink to the submission filed by CNSC staff, available in both official languages on the CNSC website.

July 24<sup>th</sup> was a deadline set for filing by interveners. The Commission received 12 written submissions from the public. The President will soon turn the floor to CNSC staff for their presentation.

As per the agenda, this will be followed by a video presentation from OPG under response the Fukushima accident and a presentation from the Ontario Ministry of Labour.



Before opening the floor for questions, the President will invite representatives from the different licensees to provide comments, if any.

After a first round of questions, we will go through each written submission filed by the public and the members will have an opportunity to ask questions on these submissions.

I note that the security ratings are part of the public document filed by CNSC staff for the first time. I just wish to remind the Members that sensitive questions pertaining to security, if any, will be dealt with confidentially at the end of the question period in a closed session. If that is the case, representatives from CNSC staff and affected licensees would be invited to join the members in the anteroom.

However, at this time, there has been no request by the Members to have an in-camera session.

Mr. President.

**THE CHAIRMAN:** Okay, before we go into the presentation, I'd like to mention some people who are joining us here today. We have, in the room, if I understand correctly, in attendance, Dr. Adams from Natural Resources. We have Jean-Patrice Auclair and Mr. Brian Ahier from Health Canada and by teleconference, Mr. Doehler for the Ontario Ministry of Labour. Can you hear

us?

Mr. Doehler, can you hear us?

I guess not.

Let's try Mr. Kontra from Emergency Management Ontario. Can you hear us?

And Mr. Ciuciura for the Durham Emergency Management? Is anybody online?

Okay, technology's not working. So we'll try to re-establish connection and I'll keep you up to date as to what's going on.

In the meantime, CNSC, you have some staff representations so Mr. Rzentkowski please proceed.

**MR. RZENTKOWSKI:** Thank you very much Mr. President.

Today I have the pleasure to present, for information only, the CNSC staff integrated safety assessment of Canadian nuclear power plants for 2011. Hereafter referred as the NPP report.

This morning's presentation of the NPP report includes also the important points of the supplemental CMD 12-M40.A which provides an update on the actions placed on licensees as a result of lessons learned from the Fukushima accident.

The NPP report summarizes CNSC staff's assessment of the safety performance of Canada's

operational nuclear power plants for 2011 including the security assessments. The NPP report reflects the effort of almost 200 CNSC staff members who are directly involved in the regulatory oversight of nuclear power plants in Canada.

With me today are the Directors from the Directorate of Power Reactor Regulations, who will present the NPP report, and the Directors for the technical support branch, who are available to answer any question the Commission may have.

First, the general information contained in the NPP report will be presented by Mr. Peter Corcoran, to the left, Director of the Licensing Support Division, who will provide background information on the report and nuclear power plants and Mr. Ben Poulet, Director of the Compliance Monitoring Division, who will provide information related to industry benchmarking based on safety performance indicators.

Next, the performance highlights for each of the nuclear generating station will be presented by Regulatory Program Directors, behind me, Mr. Robert Lojk, Director of the Bruce Power Regulatory Program Division, Mr. Phil Webster, Director of the Darlington Regulatory Program Division, Mr. Miguel Santini, Director of the Pickering Regulatory Program Division, and Mr. François

Rinfret, Director of Point Lepreau and Gentilly Regulatory Program Divisions.

Before I turn the presentation over to the Directors, on the next two slides I will try to give the executive summary of the industry safety performance to provide the context for the station-specific highlights.

**THE CHAIRPERSON:** Before -- sorry to interrupt, but before you're going there, I'm told that we now have a guest online. And Mr. Doehler, can you hear us?

**MR. DOEHLER:** Yes, I can.

**THE CHAIRPERSON:** Thank you. Mr. Corcoran?

**MR. CORCORAN:** Yes, I'm here. Thanks.

**THE CHAIRPERSON:** Okay. And Mr. Ciuciura? Mr. Ciuciura from Durham Emergency Management? No, so I guess we'll find him. We're working on it.

Okay, thank you. Please proceed.

**MR. RZENTKOWSKI:** Thank you.

As I stated already now, I would like to give the executive summary of the industry safety performance to provide a context for the station-specific highlights.

As summarized on this slide, CNSC staff have made the following observations with respect to safety performance of NPPs in 2011.

There were no serious failures of operating systems at any NPP that could potentially challenge protective barriers.

No member of the Canadian public received a radiation dose above the regulatory limit of one millisievert per year. In fact, doses to the public from Canadian NPPs were almost one 1,000 times lower than the regulatory dose limit.

There were no exposure of radiation workers at Canadian NPPs above the regulatory dose limit of 50 millisieverts per year.

There were no radiological releases from NPPs above the regulatory limits.

The severity of injuries and accidents involving workers was minimal in 2011. In fact, the overall accident severity rate for Canadian NPPs remain generally lower than that of other Canadian industries in the energy sector.

All NPP licensees complied with their licence conditions concerning Canada's international obligations on the peaceful use of nuclear energy.

I would like to point out here that these positive outcomes were the result of a multitude of provisions undertaken by each licensee and are, in general, a reflection of good organizational management

and control, as demonstrated on the next slide.

This table shows the rating for the safety and control areas and the integrated plant ratings for the licensees and the industry. As you may recall, we have four rating categories, namely "fully satisfactory", FS, "satisfactory", SA, "below expectation", BE, and "unacceptable", UA.

Across the industry, among the seven stations rated in 2011, eight ratings in five safety and control areas were assessed as fully satisfactory and the remaining 90 ratings were assessed as satisfactory. There were no safety and control areas rated as below expectations or unacceptable in 2011.

These observations are reflected in the industry performance average, which was satisfactory in each safety and control area.

Regarding the overall station safety performance, the integrated plant ratings for six stations were satisfactory while, for Darlington, it was rated as fully satisfactory. These results reflect the CNSC's confidence in the licensee safety performance in each of the safety and control area at all stations during 2011.

This concludes my brief overview of the industry safety performance.

I will now ask Mr. Peter Corcoran of the

Licensing Support Division to provide background information on the NPP report. He will also report on the feedback from the public comment process conducted earlier this summer.

**MR. CORCORAN:** Thank you, Dr. Rzentkowski. Good morning, Mr. President and Members of the Commission.

In this next section of the presentation, I will be providing some background information on the 2011 NPP report and its format, the public comment process and information on Canada's nuclear power plants.

The 2011 NPP report is partitioned as follows. Part 1 provides the safety performance ratings for the industry as a whole and for each nuclear power plant as well as the assessment narratives. It is important to note that the period of assessment for Part 1 was the 2011 calendar year.

Part 2 focuses on regulatory developments and issues on a station by station basis. This part includes amendments to the licence, revisions to the licence conditions handbook and updates on major projects and significant regulatory issues.

It spans the broader period of January 2011 to April 2012 in order to allow us to update the Commission and the Canadian public on more recent developments.

In the 2011 NPP report, we included in Part 2 a summary of the early notification reports submitted by each nuclear power plant licensee to the Commission Tribunal.

Part 3 provides summarized information on the lessons learned and the actions taken by the CNSC and licensees as a result of the Fukushima accident.

The 2011 report provides the results of a systemic assessment of each nuclear power plant's safety performance and provides ratings for the safety and control areas for the industry as a whole and for each station. It also provides an integrated plant rating indicating overall safety performance at each nuclear power plant.

In 2011, the CNSC continued to use the safety control and -- sorry, the safety control area framework for regulatory oversight in the areas of licensing, inspection and assessment of the operating nuclear power plants in Canada. For the first time in this NPP report, CNSC staff used all 14 safety and control areas in determining each station's Integrated Plant Rating, or IPR.

A change for the 2011 NPP report was to amalgamate the previous separate texts for the Pickering A and Pickering B stations into a combined Pickering A and B



text. However, the ratings for Pickering A and Pickering B were determined and presented separately. This aligns with the format used for the Bruce A and B stations.

For the first time in 2003 -- for the first time since 2003, the station security performance assessments and ratings will be provided in this NPP report.

Finally, as part of the 2011 report has been dedicated to the actions and responses of the staffs of the CNSC and the various nuclear power plants following the March 2011 Tepco Fukushima Daiichi nuclear accident.

A summary is provided of the activities, completed and underway to implement the lessons learned from the accident in order to strengthen defence in-depth and onsite emergency preparedness at each site.

The 2011 NPP report was made available to the public for review and comment in advance of this Commission meeting. The comment period covered four weeks, from June 26<sup>th</sup> until July 24<sup>th</sup>, 2012. Public comments were requested through the CNSC website and through email notifications.

For the 2011 NPP report, a notification was also made using social media. In response to these notifications, a total of 12 written submissions were received from the public.

In addition, local media outlets from the host communities were given the opportunity to interview CNSC staff on the contents of this report. The comments received could be categorized into one of three groups: Those concerning the contents of the NPP report; those pertaining to the Fukushima response; and a final group that included other comments not related to those first two groups.

The Commission will recall that Early Notification Reports were presented and reviewed in detail in prior CNSC proceedings throughout 2011.

Please also note that CNSC staff can, in the context of this presentation today, respond only in terms of power reactor regulation. That said, CNSC staff have reviewed the submissions and are prepared to respond at the end of this morning's presentation to any questions you may have on the comments received through the public consultation process.

As this graphic shows, the nuclear power plants in Canada are located at five sites; three in Ontario, one in Quebec, and one in New Brunswick. The table in this slide shows the year of start up and the licence expiry date for each nuclear power plant.

During 2011 and the first quarter of 2012, the licences for Gentilly 2 and Point Lepreau were

renewed. You will note from the table that Bruce A and Bruce B now have the same licence expiry dates.

Similarly, the licences for Pickering A and Pickering B stations, both currently align to a common expiry date.

There are a total of 22 licence nuclear power reactors in Canada. This graphic depicts the status of each reactor as of 2012. Of the total number, 20 reactors are operating or being returned to service, as shown by the blue and green bundles, and two reactors are in a safe storage state as depicted by the red bundles.

You may note that this familiar graphic now shows Bruce A units 1 and 2 and Point Lepreau with blue bundles, as these reactors are in the process of being returned to service after having been refurbished.

I will now turn the presentation over to Mr. Benoit Poulet of the Compliance Monitoring Division.

**MR. POULET:** Thank you, Mr. Corcoran.

Last year, in the 2010 NPP report, CNSC staff presented for the first time performance comparisons between the Canadian nuclear power plants and other national and international organizations.

Five parameters, for of which were included in the 2010 NPP report are being presented here today. These five parameters are the number of reactor trips, the unplanned capability loss factor, the industrial accident

frequency, the radiation dose to the public, and the radiation dose to the Canadian NPP workers.

This last parameter replaces the average collective dose parameter, which was included in last year's NPP report. CNSC staff implemented this change based on comments provided following the 2010 NPP report presentation.

Before proceeding, I wish to point out that some of the 2011 performance values from external organizations were not available at the time of publication. However, since publication of the CMD, the 2011 values from the World Association of Nuclear Operators, or WANO for short, have become available and are reflected in today's presentation.

The first comparison shown is the number of unplanned reactor trips per 7,000 operating hours. I should explain that the 7,000 operating hours is representative of the number of operating hours in a year for most NPPs around the world. It represents an 80 percent capacity factor.

The data shows the performance of the Canadian nuclear power plants is comparable to that of the World Association of Nuclear Operators. It can be seen that in 2011, the number of reactor trips for Canadian reactors continue to remain below the international target

of one reactor trip per 7,000 operating hours.

The next figure compares the unplanned capability loss factor for Canada versus WANO values. It should be explained that this figure has been revised from those provided in the CMD. This is because upon further review, it was discovered that WANO represents -- WANO values present the median value of this factor and that in the CMD, we had presented the mean value. We have corrected this in our presentation to better align with the WANO values.

This unplanned capability loss factor indicates the percentage of the year when a station is not producing electricity due to unforeseen circumstances. These include, for example, maintenance outage extensions, unplanned shutdowns, and unplanned load reductions.

Another way of looking at this graph is to look at the difference from 100 percent, as this shows the percentage of the year when the reactors were available to produce power not including plant outages.

For Canadian reactors, this value increased during the 2010 to 2011 period from 95 percent to 97.6 percent. The 2011 value of 97.6 percent for the Canadian NPPs approaches the WANO value of 98.2 percent.

It can also be seen that for the past three years, the unplanned capability loss factor for the

Canadian NPPs has been steadily decreasing with a 2011 value lower than a 2009 value by nearly 70 percent.

While the unplanned capability loss factor for Canadian nuclear power plants approached the level of the worldwide industry in 2011, it remained higher than the WANO unplanned capability loss factor. This difference cannot be attributed to a single cause, as it is the result of several contributing factors such as an aging reactor fleet, as evidenced by extensions of maintenance outages and equipment reliability issues, or de-ratings due to unavailability of fueling machines.

Accident frequency is a measure of the number of non-life threatening injuries and fatalities at stations per 200,000 person hours worked.

This slide shows the industrial accident frequency for the Canadian nuclear industry, that is in red, versus the other Canadian industries in the energy sector.

Although no external data is available for 2011, it can be seen that the Canadian nuclear industry continues to be a safe industry in terms of the frequency of workplace accident. The frequency values for the Canadian nuclear industry have been declining during the past five years and remain comparable and, in some cases, lower than the other Canadian industry values.

By looking closely at the radiological dose to the public values from the Canadian nuclear power plants, we can see that in 2011, they were well below the one millisieverts regular public annual dose limit for all Canadian NPPs.

Please note that because the doses are very low, the values are very low, we used a logarithmic scale to illustrate the vertical axis in this figure. Each unit on that axis represents a tenfold increase in the value of the estimated dose.

In fact, the highest dose, the public value, in 2011, that is, 0.0015 millisieverts, was nearly 99.9 percent below the annual regulatory limit, a demonstration of the effectiveness of the radiological and environmental protection programs implemented by Canadian nuclear power plant operators.

Analysis of the figure shows that the dose to the public values for Point Lepreau, Darlington, and Pickering A and B were actually below the regulatory limit by a factor greater than 1,000.

The public dose data confirms the Canadian licensee programs continue to be effective in protecting the public and the environment from radiological releases.

CNSC staff monitors the radiological effective doses to Canadian nuclear power workers, and

shown in this slide is the distribution of doses for 2011 and the trends for the previous four years.

I would like to highlight the fact that in 2011, over 80 percent of the workers at Canadian nuclear power points received a total effective dose of less than one millisievert.

This slide shows that there has been an increase in the number of workers receiving doses greater than 15 millisieverts in 2011. Twenty (20) workers received a dose greater than 20 millisieverts.

These Bruce Power workers were involved in a planned outage and refurbishment activities which require workers to be in closer proximity to the reactor.

The highest dose received by a Canadian worker in 2011 was slightly less than 26 millisieverts, or approximately half of the Canadian regulatory dose limit. No Canadian worker received a dose exceeding the regulatory limit in 2011.

This concludes the section of the CNSC staff presentation on industry benchmarking.

I would now like to turn to the Directors of the Regulatory Program Divisions, who will present summaries of their respective sites.

These presentations will begin with the multi-unit stations in Ontario, Bruce A and B, Darlington,



and Pickering A and B, and then proceed eastward to the single unit stations at Gentilly and Point Lepreau.

The Director of the Bruce Regulatory Program Division, Mr. Robert Lojk, will now summarize the 2011 performance for Bruce A and Bruce B units.

**MR. LOJK:** Thank you, Mr. Poulet.

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

Bruce A is licensed to operate the Bruce A and Bruce B nuclear power plants, both located on the shores of Lake Huron. Both stations consist of four units each.

In 2011, at Bruce A, Units 3 and 4 were operational. Units 1 and 2 were being returned from refurbishment and are being restarted in 2012.

At Bruce B, all four units were operational.

The Bruce A and B operating licences were renewed effective November the 1<sup>st</sup>, 2009 for a five-year period. Both licences will expire in October 2014.

This table shows the 2011 performance ratings for the safety and control areas for both Bruce A and Bruce B. As can be seen, the performance of the conventional health and safety area at both Bruce A and Bruce B continue to be fully satisfactory as in 2010.

The rating of the security areas at both stations was full satisfactory. In addition, a change for this year, the radiation protection rating for Bruce A improved from below expectations in 2010 to satisfactory in 2011.

Overall, the integrated plant ratings for Bruce A and B were both satisfactory in 2011.

The preventive maintenance completion ratio is used as a means to monitor the effectiveness of the maintenance program and minimizing the need for corrective maintenance activities. This ratio increased for Bruce -- both Bruce A and Bruce B, indicating improvements in the maintenance program.

Bruce Power implemented significant improvements following the 2010 regulatory request to enhance the radiation protection program. In 2011, Bruce Power purchased and installed 23 alarming monitors at each station to enhance tritium release monitoring.

Bruce Power has implemented a highly effective security program at these stations. The nuclear response force program is robust, and its competitive team again had excellent results nationally and internationally.

For the Bruce A and Bruce B licences and licence condition handbooks, there were no licensing

amendments in 2011 and one revision made to the Bruce A and Bruce B licence condition handbook.

These revisions were approved by the Director-General and Directorate of Power Reactor Regulation, and the majority of the changes were administrative in nature.

Four Early Notification Reports, or ENRs, were presented to the Commission Tribunal related to Bruce A and Bruce B during 2011 and the first quarter of 2012. All ENRs were of low or no safety significance.

Bruce Power continued to implement activities derived from the environmental assessment fallout monitoring program and Bruce A, in construction activities, essentially were completed for Unit 1 and a number -- and Unit 2 in 2011.

The fuel reload was completed and the guaranteed shutdown state hold points were released for both Units 1 and 2 recently. The remaining hold points for the increase of reactor power by 50 percent are -- remain, and they will soon come up for Units 1 and 2.

I will now turn over the presentation Mr. Phil Webster, Director of the Darlington Regulatory Program Division.

**MR. WEBSTER:** Thank you, Mr. Lojk, and good morning, Mr. President, Members of the Commission.

Ontario Power Generation is licensed to operate the Darlington Nuclear Power Station, which consists of four units, all of which were operational in 2011.

The operating licence for Darlington expires in February 2013. In preparation for this, the Commission hearing for relicensing Darlington is scheduled for November 2012. At this same hearing, presentation on the environmental assessment for the Darlington refurbishment will be made.

This table shows the performance ratings for the safety and control areas for Darlington in 2011. Operating performance, fitness for service, conventional health and safety, and radiation protection continued to be fully satisfactory, as they had been in 2010.

Overall, Darlington received an integrated plant rating of fully satisfactory in 2011. Darlington has received this fully satisfactory rating consistently for the past four years since the integrated plant rating method was introduced.

Darlington's preventive maintenance completion ratio increased to 93 percent in 2011, the highest in the industry. This is an indication of how the station performed in maintaining a low number of corrective maintenance work orders through its highly

effective preventive maintenance program.

There were no missed mandatory safety system tests at Darlington in 2011 and the special safety systems had a high level of availability. This is indicative of a well-run reliability program.

In 2011, Darlington's radiation protection program was also highly effective in controlling worker radiological exposures. This was evidenced by the fact that the three-year worker collective dose average per unit was the lowest in Canada.

The worker collective effective dose is the sum of the doses received by all the workers in the plant during the year.

And finally, the worker safety program, conventional health and safety, was also highly effective at Darlington, resulting in no days lost to injury in 2011.

The Darlington licence, operating licence, was amended five times during 2011 and the first four months of 2012.

Darlington does not yet have a licence conditions handbook. It's the only station that does not. However, one has now been developed by CNSC staff and will be presented to the Commission at the November 2012 hearing.

Two Early Notification Reports were presented to the Commission during 2011 and the first quarter of 2012, but neither of these had any safety significance.

Darlington is changing to using a modified fuel bundle to improve the thermal hydraulic performance in the event of certain postulated accidents. This improvement is to be achieved by reducing the diameter of the centre fuel elements.

The demonstration irradiation of a number of bundles was successfully completed in 2012 and full core load is now being implemented at all four units.

The effective safety improvements that may be created by the use of these modified field bundles is still being evaluated by CNSC staff.

In 2011, a panel of the Commission approved the environmental assessment screening information document for Darlington's proposed refurbishment and continued operation. OPG has now submitted its integrated safety review, which is part of the preparation for refurbishment, and staff are reviewing it.

I will now turn over the presentation to Mr. Miguel Santini, the Director of the Pickering Regulatory Program Division. Thank you.

**MR. SANTINI:** Thanks, Mr. Webster. Good

morning members of the Commission.

The Pickering nuclear generating station consists of the Pickering A and Pickering B stations operated by Ontario Power Generation. Both stations consist of four units.

In 2011, at Pickering A, units 1 and 4 were operational and units 2 and 3 were in a safe stored state. All units at Pickering B were operational. Both the Pickering A and Pickering B operating licences will expire in June 2013 and the Pickering A operating licence was of the form in 2011 and include the licence condition handbook.

Early this year, the Pickering B operating licence was amended to align to the Pickering A format including the licence condition handbook. For the licence renewal, as per Commission request, the two licences will be consolidated.

This table shows the 2011 performance ratings for the safety and control areas at each station, Pickering A and B. The performance for both in all safety and control areas were rated as satisfactory. Overall, the integrated plant ratings for Pickering A and B were both satisfactory in 2011.

Pickering's maintenance program met industry best practice. The preventative maintenance

completion ratio was 90 percent in in 2011; one of the highest in the industry. An inspection conducted in -- by CNSC staff in 2011 of the simulator-based initial certification examination at Pickering B revealed that examination did not comply with all the requirements. CNSC staff has requested OPG to implement the corrective action to the plant to address the deficiencies. A follow-up to this inspection is planned to assess the effectiveness of the corrective measures.

In the moderator refill operation of the unit 5 planned outage in 2011, concentration of GADOLINIUM, the additive used to control reactivity, decreased unexpectedly. The decrease was due to the formation of gasoline and oxalate and its subsequent deposition in the moderator system.

The Commission Tribunal granted OPG temporary approval for an alternate guarantee shutdown state after they stocked up reactor power was scaled at five percent of full power for an extended period to burn off the remaining deposits of GADOLINIUM.

The worker safety program was effective at Pickering resulting in both the accident frequency and the accident severity rate decreasing in 2011. Management of asbestos in Pickering A however continue to be a concern to CNSC staff. OPG is currently implementing the



corrective action plan. CNSC staff in cooperation with Ontario Ministry of Labour are following up on this issue.

While Pickering A operating licence was amended three times in 2011, the Pickering B operating licence was amended eight times by the Commission. The Pickering A licence condition handbook was revised five times during the reporting period. The licence condition handbook revisions were approved by the director general of the Directorate of Power Reactor Regulations. The majority of the changes were administrative in nature.

Eleven early notification reports, or ENRs, were presented to the Commission Tribunal related to Pickering A and B during 2011 and the first quarter of 2012. All ENRs were low or with no safety significance.

My last slide provides an update on three regulatory topics. First, OPG is currently managing the end of life for both Pickering A and B. In 2011, OPG announced that the Pickering B will not be refurbished and both stations will stop commercial operations in 2020. It is projected that Pickering B's four units will reach the assumed design life of the pressure tubes in the period 2014 to 2016. To support Pickering B operations beyond the assumed design life, OPG submit to continue operation plan.

In addition, OPG has developed a

sustainable operation plan and a decommissioning strategy to prepare for the end of operation of the plant. CNSC staff are currently finalizing the review of these documents and detail assessments will be included in the 2013 licensing documentation.

The *Fish Mortality Act* was discussed in detail in a previous agenda item and I will not expand. Just for the record, I will state that the CNSC staff are satisfied with the progress made by the OPG on the areas of impingement and thermal plume and are confident that OPG has been diligent in reducing fish mortality considering that the plant will be permanently shut down in 2020.

CNSC staff would follow up OPG's performance on these areas to ensure that the program continues to be effective. CNSC staff is working with the Department of Fisheries and Oceans and with Environment Canada on these topics.

On entrainment, some issues remain to be resolved. Although CNSC staff recognizes there is no technological solution that would enable OPG to meet the targets within the eight years left on the plan, OPG proposed mitigating measures to offset mortality due to entrainment and may require further collaboration with the conservation authorities to increase the woodland habitat

enhancement already in place.

Regarding the public alerting system for the city of Pickering and the Durham region, this issue was discussed twice at public meetings through the reporting period. The Durham Region is responsible for implementing and operating an emergency public alertness system around the Pickering area.

As you may recall from the March 2012 update and to bring the region in compliance with the provincial nuclear emergency response plan, we can get three-kilometre sound. They indicated that by April 2012, they will have determined a number of location of additional sirens that would complete the installation of these additional sirens by the fall 2012.

As of the end of July 2012, the region was confirming the performance of installed sirens and did not know as of yet how many additional sirens are required. This issue has resulted in the deadline of April 2012 to be missed by three months at least.

CNSC staff is of the opinion that the region commitment to comply with PNERP by the fall of 2012 may be at risk. The region and the province committed to present an update on the implementation status to the Commission late this year.

This concludes my presentation and I will

now turn it over the monsieur François Rinfret, le directeur de la Division du Programme de réglementation de Gentilly.

**M. RINFRET:** Merci Monsieur Santini. Ici François Rinfret. Bonjour M. le président, mesdames et messieurs les commissaires.

Gentilly-2 est une centrale à tranche unique avec un réacteur de modèle CANDU 600. Il est exploité par Hydro-Québec. En 2011, la centrale était en exploitation. Le présent permis de la centrale fut renouvelé en juin 2011 et il expire le 30 juin 2016.

À l'écran, on voit les cotes de rendement données en 2011 à Gentilly 2 pour chaque domaine de sûreté et de réglementation. La performance de Gentilly 2 dans chaque domaine de sûreté et de réglementation était satisfaisante. Globalement, la cote intégrée de rendement de la centrale pour Gentilly 2 en 2011 est donc satisfaisante aussi.

Au cours de 2011, Hydro-Québec a continué à mettre de l'effort et respecter ses engagements par rapport à la CCSN dans le but de régler et fermer les dossiers en suspens. Dans le domaine de l'entretien, Hydro Québec a mis ses efforts dans ce domaine.

La valeur pour ce qui est de l'entretien préventif se rapproche de la cible et des meilleures

pratiques de l'industrie nucléaire.

Finalement, le personnel de la CCSN a approuvé la révision des limites opérationnelles dérivées, les LOD, d'Hydro-Québec basées sur la norme de la CSA.

Les limites opérationnelles dérivées sont les limites de rejet dans l'environnement qui se traduiraient par une dose pour le public qui ne dépasserait pas la limite réglementaire actuelle pour leur exposition.

Le permis d'exploitation de Gentilly-2 a été renouvelé le 21 juin 2011 pour une période de cinq ans. Il y a eu un amendement fait au permis d'exploitation. Le manuel des conditions du permis a fait l'objet d'une révision en 2011. Ça a été approuvé par le directeur général de la Division de la réglementation des centrales nucléaires.

Deux rapports de notification rapide ont été présentés au Tribunal de la Commission relatifs à Gentilly-2 au cours de 2011 et le premier trimestre de 2012.

Les événements faisant l'objet de ces rapports de notification avaient peu d'importance sur le plan de la sûreté, mais ils ont été présentés à cause de leur couverture médiatique.

Tout au long de l'année 2011, le personnel

de la CCSN a poursuivi son examen des documents sur le projet de réfection soumis par Hydro-Québec relativement à l'examen intégré de sûreté.

À la fin de la période de référence, Hydro-Québec n'avait toujours pas reçu une réponse définitive de la part du Gouvernement du Québec quant à l'autorisation du projet de réfection de la centrale Gentilly-2.

Hydro-Québec doit procéder, dans le cadre de son permis, à l'arrêt du réacteur en fin d'année, qu'il y ait réfection ou non.

Une petite erreur de typographie sur les écrans. On parle du 31 décembre à minuit, donc en 2013.

La CCSN et Hydro-Québec discutent présentement de la sûreté en arrêt à partir de 2013 selon les scénarios possibles de types d'arrêt.

I will now continue with presenting the Point Lepreau generating station's safety assessment portion of the report. The Point Lepreau nuclear power plant consists of a single CANDU-600 reactor located on the shores of the Bay of Fundy. New Brunswick Power Nuclear is licensed to operate that plant.

The Point Lepreau generating station was shut down over four years ago for refurbishment of a reactor and is currently being returned to service.

The previous operating licence had been

renewed in 2011 for one year and the current operating licence was issued in February 2012. It will expire in June 2017.

The table shows the 2011 performance ratings for the safety and control areas of Point Lepreau. The performance for the station in all safety and control areas was rated as satisfactory. Overall, the integrated plant rating for Point Lepreau was then satisfactory in 2011.

During 2011, Point Lepreau made considerable progress in improvements in the area of personal training, which had been found in 2010, through inspections, to have fallen below CNSC expectations.

As a result of the changes and the effective implementation of a systematic approach to training, NB Power received a satisfactory rating in this area for 2011.

If you recall in the 2010 NBP report, emergency management and fire protection at Point Lepreau was assessed to be below expectations, largely on account of the performance of the Emergency Response Team.

A protocol was developed and approved in 2011 to ensure the proper focus on delivering improvements in fire protection and response. The protocol was respected. Improvements were noted during the year. A

satisfactory rating was then reached in this area by the end of 2011.

During the refurbishment period, many of the Fukushima-related safety upgrades were implemented at Point Lepreau. This includes, for example, installation of passive autocatalytic recombiners at the station.

New Brunswick Power Nuclear aims at finalizing the action items related to the Fukushima response by the target completion dates given in the CNSC action plan.

There was one licence amendment made to the Point Lepreau operating licence. That was then renewed in April 2011. For the renewed licence in the New Licence Condition Handbook issued in February 2012, there have been no amendments or revisions to date.

One ENR, or Early Notification Report, was presented to the Commission Tribunal related to the Point Lepreau operation during 2011 and the first quarter of 2012. The reported event had no safety significance.

At the 2011 relicensing hearing for Point Lepreau, the Commission Tribunal required that New Brunswick Power Nuclear complete a site-specific seismic hazard assessment and shared the results with the public.

New Brunswick Power Nuclear has submitted an assessment plan to the CNSC, and the initial seismic



hazard assessment will be completed by the end of 2012.

For the Point Lepreau refurbishment project, New Brunswick Power's plans show that the reactor is expected to be back to full power by the fall of this year.

I will now turn the presentation back to Dr. Rzentkowski.

**MR. RZENTKOWSKI:** Thank you very much, Mr. Rinfret.

This next section of the presentation refers to some actions taken by licensees in response to two CNSC 12-2 requests. They are the 2010 request for alpha monitoring program enhancements and the 2011 request for information and action in relation to TEPCO Fukushima Daiichi nuclear accident.

Following the 2009 alpha contamination event at Bruce A and the CNSC 12-2 request made in June 2010, NPP licensees undertook improvements of the radiation protection program through several alpha monitoring enhancements. Licensees continued these program enhancements during 2011, and the activities completed to date demonstrate the commitment to continue safety improvements in the area of radiation protection.

Full implementation of the majority of the long-term program enhancements, is expected to be

completed by the end of 2012. Some minor delays in implementation of certain program elements are expected due to changes in scheduled outages or the provision of additional documentation requested by CNSC staff.

These minor delays do not change the CNSC staff general conclusion. CNSC staff is satisfied with the measures in place at each NPP to protect workers from alpha radiation hazards.

On March 11, 2011, a magnitude 9.0 earthquake, followed by tsunami, struck Japan. These natural disasters led to a severe accident at the Fukushima Daiichi nuclear power plant.

On March 17, 2011, the CNSC issued a 12-2 regulatory request to NPP licensees to conduct a safety review of NPP facilities to confirm their ability to withstand external events. In particular, NPP licensees were directed to review the initial lessons learned from the Fukushima nuclear accident, re-examine the safety cases of operating reactors and report on the implementation of measures to address any significant gaps.

In conjunction with the 12-2 request, CNSC initiated the following steps. First, conducted inspections of all NPP sites, focusing on the protection against external hazards and availability of onsite

emergency equipment and; second, establish a Fukushima Taskforce to review the licensees' submissions and to recommend actions to strengthen defence in-depth and onsite emergency preparedness of operating reactors.

From the review of the licensee's Fukushima submissions and other available information, CNSC staff produced a task force report, management response and CNSC action plan which identified measures to be implemented by licensees to prevent and mitigate impacts from beyond design basis accidents.

The CNSC action plan was made available for public comments. The plan was presented to the Commission in May 2012 and subsequently was accepted in June 2012.

The CNSC action plan describes site-specific actions that are applicable to each NPP licensee. These actions relate only to those elements of the CNSC action plan that impact on the Directorate of Power Reactor Regulation and which have been integrated in normal compliance activities managed by the Power Reactor Regulatory Program divisions. These are described in more detail on the next slide.

The findings of the post-Fukushima review and the actions taken to further enhance NPP safety, in order to reduce the risk associated with their operation, were categorized in the following groups; external

events, design issues, severe accident management, emergency preparedness and international cooperation. A total of 36 site-specific action items were identified in the CNSC action plan for each NPP licensee.

Please note that the actions listed in Appendix F of the NPP report were updated in supplemental CMD12-M40.A as of the end of July 2012.

These action items are to be completed by NPP licensees by the end of 2015, consistent with the timeline established in the management response to Fukushima task force report issued in October 2011, and are to be completed in the short term by December 2012, in the medium term by December 2013 and in the long term by December 2015.

The current status of the work in progress to address these action items indicates that the majority of the safety improvements needed will be implemented in accordance with the projected schedule. Some minor revision to some items may be required to accommodate either maintenance or refurbishment outages.

Further details with respect to implementation of safety improvements are provided on the next slide.

The licensee's actions that are currently being addressed as part of the Fukushima follow-up

activities are focused on strengthening the reactor defence in depth and on-site emergency preparedness through the implementation of additional measures to prevent a severe accident or to halt its progression.

These measures include back-up portable pumps and generators and the installation of accessible connection points to provide additional sources of water to the following critical systems or components.

First, to the steam generators to prevent fuel failure by maintaining the heat remover capability of the steam generators which, in turn, maintain natural circulation of coolant through the reactor core.

Second, to the calandria vessel to prevent fuel channels failure and consequential core damage by keeping the fuel channel submerged to maintain heat removal. This would prevent occurrence of a severe accident.

Third, to the calandria vault or shield tank that contain calandria vessel to prevent vessel failure by keeping its bottom submerged to maintain heat removal from molten fuel. This would halt the progression of a severe accident.

Also, these measures include an action plan aimed at preventing containment failure or maintaining containment integrity by the following means: installation

of a filtered containment containment vent system to reduce pressure build-up in containment and prevent uncontrolled release of radioactivity; and also installation of passive hydrogen recombiners to reduce hydrogen concentration in the containment.

All these preventive means are being implemented by the NPP licensees as part of the Fukushima follow-up activities. It should be noted that a number of these design changes were already included in some refurbishment projects prior to the Fukushima nuclear accident, for instance, at Point Lepreau Generating Station as part of its refurbishment project.

Last, but not least, the CNSC action plan also contain provision for enhancing the emergency preparedness and response, including protection of the public. This is being addressed through revisions to improve the licensee's emergency plans and through updates to emergency facilities and equipment.

I would like to end this staff's presentation with some concluding remarks on the performance of NPP licensees during 2011 and the actions taken by licensees in response to CNSC 12-2 requests.

Based on observations and assessments of safety performance in 2011, CNSC staff made a number of general conclusions.

They are, nuclear power plants operated safely in Canada during 2011. The NPP operators made adequate safety and control provisions to protect the health and safety of Canadians and their environment as well as to ensure that Canada was able to meet its international obligation on the peaceful use of nuclear energy.

The integrated plant ratings, which measure the overall safety performance of each NPP, were determined to be fully satisfactory for Darlington and satisfactory for the remaining six stations.

It is important to underline the fact that, in 2011, the lowest rating received by licensees was satisfactory and no licensee received a below expectation rating.

There were significant improvements made during 2011 by Bruce A in radiation protection, and the rating in this safety and control area increased to satisfactory.

I wish to point out that all licensees have continued to improve their Alpha monitoring as a result of a 2010 CNSC 12-2 request. Full implementation of the majority of the long-term radiation protection program enhancements is expected to be completed by the end of 2012.

Furthermore, Pointe Lepreau improved its emergency management and fire protection rating to satisfactory. This was a prerequisite for reactor return to service following refurbishment.

I would like to conclude here by saying that the CNSC staff safety assessments for 2011 provides strong assurance that the risk from operation of NPPs in Canada remains very low. This conclusion is further supported by the post-Fukushima safety review conducted by the CNSC task force and NPP licensees.

To summarize the measures taken today by the Canadian nuclear industry in response to the lessons learned from the Fukushima nuclear accidents, I would like to state the following.

The industry response to the Fukushima nuclear accident has been comprehensive and timely and has demonstrated a strong commitment to address the CNSC action plan. The industry performed systematic reviews to identify gaps and opportunities for improvement. Many improvement plans are in place and significant progress has been made in the implementation of safety upgrades at Canadian NPPs.

I believe that the combined effort of the CNSC and NPPs licensees places the Canadian nuclear industry at the forefront, from an international



perspective, of those countries who have responded to the lessons learned from the Fukushima Daiichi nuclear accident.

The task force findings and recommendation will be shared among international counterparts and organizations as part of ongoing IAEA initiatives to enhance nuclear safety at the international level.

CNSC staff will continue to report to the Commission and to the Canadian public annually on the status of implementation of the action plan, as we are doing today, as part of our presentation of the safety performance of nuclear power plants and other nuclear facilities.

In conclusion, I would like to assure the Commission and the public that the CNSC action plan is not just about plans and schedules. It's about implementation of improvements and upgrades to further enhance the nuclear safety in Canada.

Thank you for your attention.

Mr. President and Members of the Commission, this concludes the presentation of the CNSC staff integrated safety assessment of Canadian nuclear power plants for 2011.

CNSC staff is now available to answer any questions from the Commission Members.

**THE CHAIRPERSON:** Thank you.

Before we go into this questions and hear from the actual licensee and operators, I think I'd like to hear from the Ontario Ministry of Labour, who have a presentation to make, and I understand that Mr. Doehler is available and ready to make this presentation.

**MR. DOEHLER:** Yes, thank you, Mr. President.

**THE CHAIRPERSON:** Okay. Please proceed.

**12-M40.13**

**Oral presentation by  
Ontario Ministry of Labour**

**MR. DOEHLER:** Good morning. My name is Lothar Doehler. I'm the Manager of the Ministry of Labour's Radiation Protection Service, and my presentation today is entitled "Ontario Ministry of Labour Overview of the Activity in Ontario's Nuclear Power Plants".

And please note that the word "activity" does not mean in the radiological sense as applied to the inside of the plants, of course.

So my second slide is an outline of basically what I'll be talking about today, the Ministry of Labour's mandate, roles and responsibilities, and

jurisdiction, the reason for the creation of our Memorandum of Understanding with the Canadian Nuclear Safety Commission based on the Bruce Alpha exposure event, some key elements of the MOU, and then I'll be presenting our own statistics with regard to field visits, orders issued, fatalities and criticals. Of course, there were no fatalities.

And then I'll be switching to the other side of our service, which is a radiological environmental monitoring program, and then the conclusion.

So on slide 3, the Ministry of Labour's mandate on key areas of occupational health and safety, employment rights and responsibilities is to set, communicate, and enforce workplace standards while encouraging greater workplace self reliance. Basically an internal responsibility system.

The Ministry also develops, coordinates, and implements strategies to prevent workplace injuries and illnesses and can set standards for health and safety training.

Our normal course of work is to conduct proactive inspections and reactive investigations, and these investigations would stem from notification of a fatality, a critical injury, a work refusal, or a complaint.

We rely on a compliance strategy to improve the health and safety culture of a workplace, to reduce, of course, injuries and illnesses which directly lessens the burden on our health care system and reduces costs or avoids costs for employers and the Workplace Safety and Insurance Board and provides a level playing field for compliance companies.

On slide 4, normally, as a general matter, the regulation of nuclear facilities falls under exclusive jurisdiction of the federal government. However, by a virtue of a regulation made under the Canada Labour Code, it excluded certain designated nuclear facilities, those actually belonging to Ontario Hydro in the past or the present as successors.

Those workers were excluded from federal legislation and in place was -- provincial legislation was imposed.

So at the same time, in 1998, a Memorandum of Understanding was signed with Human Resources and Skills Development Canada to outline the roles and responsibilities of the Ministry of Labour with respect to protecting workers at the designated nuclear generating facilities. And it was also provided as a compensation tool for monetary reimbursement.

On the next slide, I think everyone at this

hearing is familiar with the Bruce Power Alpha radiation contamination event.

The Ministry of Labour responded to a letter of concern from a local union and investigated the incident and specific allegations.

During the investigation, the Ministry of Labour construction inspector was partnered with a radiation protection officer from my unit and also requested the assistance of a Canadian Nuclear Safety Commission site inspector.

They found that no work refusal had taken place -- no formal work refusal had taken place. There were no non-compliance issues with respect to the *Occupational Health and Safety Act* or the *Nuclear Safety and Control Act*. Consequently, no orders were issued.

Now, this -- this event prompted Ministry of Labour management to request the creation of a formal agreement with the CNSC.

On slide 6, the actual Memorandum was signed on July 12<sup>th</sup> of 2011. And its purpose was to establish a formal mechanism for the cooperation and for the authorized exchange of information data and technical expertise between the Ministry of Labour and the CNSC related to the exercise of their respected areas of jurisdiction at the designated nuclear facilities.

The participants are requested to carry -- in carrying out their respective mandates will cooperate with each other and support each other as appropriate in meeting their respective responsibilities and mandates.

The key elements of the MOU consist of offering each other cross-training, the opportunity to conduct joint field visits, joint planning, especially if anything implies other -- the others would affect jurisdiction, sponsorship to facilitate entry, mechanisms and links for sharing information, statistics and technical expertise and, in general, notify each other of specific triggering events.

We recently had a workshop where we discussed the details of that and are following up on that.

So jumping ahead to slide 8 -- I've covered the key elements in both 6 and 7 -- I'll present some statistics that we've compiled for the 2011-12 fiscal year, so that's March 31<sup>st</sup> -- sorry, April 1<sup>st</sup>, 2011 to March 31<sup>st</sup>, 2012.

And you can see the -- the different generating stations, the number of field visits to each. You can see that most of the field visits are reactive, which means, again, that they were as a result of a fatality, critical injury, work refusal or complaint.

The low number of proactive field visits implies that the workplaces have relatively low lost time injury rates as compiled by the Workplace Safety and Insurance Board, so the number of Orders is also relatively low compared to equivalent workplaces of similar size. There were no fatalities reported and there were two critical injuries reported in total.

So jumping to the next slide, this is where I switch perspectives and going from worker health and safety to within the plants to radio-analytical monitoring around the plants.

And our particular laboratory is part of the Ministry of Labour's operational division. It is the only provincial radio-analytical laboratory in Ontario. And we think of ourselves as the provincial radiation watchdog since our mandate is to continually monitor the environment around the province's nuclear installations to ensure that exposure to workers and the general population is kept as low as reasonably achievable.

We have a staff complement of six technical staff and administrative support and myself as the manager.

On slide -- sorry, on slide 10, I've mentioned our mandate is to ensure that the health and

safety, welfare and property of workers and the general population living in the vicinity of the nuclear reactors are not adversely affected by any emissions stemming from them.

Any results above ambient background are immediately reported to the provincial emergency operation centre of Emergency Management Ontario. And any drinking water exceedances (sic) are immediately reported to the Ontario Ministry of the Environment.

On the next slide, I describe the key responsibilities to Emergency Management Ontario. Our Ministry is one of 12 Ministries that have Order-in-Council responsibilities that are detailed in the provincial nuclear emergency response plan and our laboratories are assigned or tasked with 15 of those 20 responsibilities.

Three of the primary tasks are to establish and maintain an adequate network of fixed radiological monitoring sites in the Ontario portions of the secondary zones. We currently have 21 of these fixed sites.

We have to monitor the results and notify the Provincial Emergency Operation Centre of any abnormal or above ambient background results. And we provide laboratory facilities for the analysis of air, water, soil, herbage, milk and foodstuffs.



The next slide is just a map of where our sites are located around the nuclear power plants and also around the Chalk River reactor. And we also have a monitoring site across from the Fermi 2 reactor outside of Windsor -- sorry, the site's located outside of Windsor.

Surveillance results, and this is for the 2010, but 2011 is very similar. We have not summarized that report yet, but the results are virtually identical.

So all the sample media I mentioned before are sampled and analyzed for specific radionuclides. The results of these measurements are well below the prescribed limits for the monitored radionuclides, well below concentrations that would result in a committed effective dose of 0.1 millisievert to the public from either inhalation or ingestion. In most cases, the radionuclides are at the limit of detection of our instruments and typically represent a number of approximately 3,000 times below natural background.

So in conclusion, our health and safety statistics and environmental radiation monitoring measurements corroborate CNSC results and the Ministry of Labour continues to work with the CNSC to ensure the safety of Ontario's nuclear power plants. Thank you.

**THE CHAIRPERSON:** Thank you very much.

I'm sure there are lots of questions that

you've presented, but before we do that, I'd like to go through -- I'd like to hear from the licensees. And I'd like to start with the OPG, which I understand have also a presentation on post-Fukushima and maybe a reaction to the NPP annual plan.

So OPG, floor is yours.

**MR. TREMBLAY:** Good morning Chairman Binder, members of the Commission. I thought before we would start with my remarks, since the presentation on Fukushima is fresh, I'd just turn the floor over to Mark to introduce the video and maybe do that and then I'll carry on with my remarks.

I think I'd like Mark to make some context around the purpose of the video and why we're presenting it here.

**MR. ELLIOTT:** Okay. Good morning, Chairman Binder, Members of the Commission. For the record, I'm Mark Elliott, chief nuclear engineer for Ontario Power Generation. Good to be back with you.

I'd like to provide just a short context on the video and then show the video. I promise this will be the last OPG video of the day, so there's nothing more coming.

It's a video of the field trials of our new emergency mitigating equipment and it was made for

employee communication. So you'll get that flavour; it was addressed to employees.

And it was done because the employees are very interested, very concerned about Fukushima and what we're doing. And also it provides a bit of recognition. It was an important -- a lot of important work was done and we're recognizing them through this video.

It -- everything you'll see is consistent with what all the Canadian nuclear utilities are doing, so this isn't different than what you would see going on at the other sites.

It comes at a good time because we've done -- in reference to the Fukushima action items, there's 101 action items on OPG, and we've requested closure on 48 of those. So it comes kind of at a significant time working through it.

These 48 that we've done are -- we consider the most important for safety, and that's what you'll see on the video.

Having shown the video, we got good reports, good feedback from our employees. And so we're going to start to show it wider starting today with you and then in the community with our community stakeholders.

So with that, we'll start the video.

**(VIDEO PRESENTATION/PRÉSENTATION VIDÉO)**

Since the Fukushima event just over a year ago, OPG has been very active, first confirming that our plants are safe, robust, and that there's defence in depth, but also looking at the lessons learned from Fukushima and we put in place over a dozen projects to make our plants even safer.

We brought in equipment, we've written procedures, we've done training and improved our safety margins at both of our plants, Pickering and Darlington.

At our plants we can't have tsunamis, but we can have a lot of rainfall. And if the rainfall was more than we expected, we would want to have flood barriers in place to protect low-lying equipment. And that's what we've done. We've put in flood barriers at our plants to make sure important safety equipment does not get disabled with excessive rainfall.

One of the things you saw at Fukushima was hydrogen explosions. What we're doing here at all of our units is installing passive autocatalytic recombiners. These are devices that go into the units and would mitigate any hydrogen build-up and prevent an explosion, and they don't take power.

At all nuclear plants, you have to be ready for a severe accident. This is an accident that goes well beyond our design basis, but you have to be ready for it

and so we've put in place a system called Severe Accident Management Guidelines, or SAMG, and what it is is a set of procedures and a set of equipment that can be used if an accident happens that is much worse than expected. And we've done that.

Pickering and Darlington have procedures in the control room. The operators know what to do. They've been trained, and we're ready for that eventuality.

What Fukushima really was was a station blackout where all power was lost, and what we learned is we have to have another set of equipment that is diverse and flexible and can respond, basically ready for anything.

And what we've done is purchased 12 diesel pumps. These diesel pumps can connect to water supplies from Lake Ontario and pump water into the steam generators at all of the units at Pickering and Darlington. They have onboard fuel, so the fuel lasts for 24 hours, and they're also portable. They come on trucks, and the trucks can carry them to the site from high areas on the site. The trucks actually have cranes on them, so if there's any debris in the way, the cranes come in, take the debris off, allow the truck to get to the location that we desire.

And it's a flexible approach. It can be

used wherever it's needed. One of the things you saw at Fukushima was a lot of concern over the spent fuel pools, what we call irradiated fuel bays. These diesel pumps can be used and are set up to use, to add water to the irradiated fuel bays at Pickering and Darlington and keep the fuel cool.

We wanted to get the equipment here and ready and available to the operators. So we've gone and done that, and we have procedures to allow the operators and maintainers to open up systems and install these connections, but in the future, we want to make that more simple. We want to make that more permanent connection.

So the next phase of this project is to look at all those connection points and make them quite easy, basically plug and play, where you can take this equipment and very rapidly plug it in and it will provide cooling to the reactor.

One of the other things you saw at Fukushima was the operators did not have monitoring in the control room. You'll recall them installing car batteries into the control room to provide power so they could see what was going on.

What we've done is purchased seven generators. These, again, are diesel generators with onboard fuel, and they will allow power to go to critical

control room loads so that we can provide that monitoring to the operators.

It's very important for operators to see what's going on, to monitor the system so that they know we're being effective. We are controlling the accident. All the people around the station, in the media, in the public, want to know that we're in control. This provides the operators with that instrumentation so they can say, "Yes, we are keeping our reactors safe" or "We need to do something more." So it's very important to provide that power to the instrumentation for the control room.

To make sure all this equipment is usable for the operators, we first did tabletop discussions. We talked it through, talked the procedure through with the operators to make sure that it did make sense, they could do what we were asking them to do, and we did that in March.

We've moved on beyond that to actually practising. We've moved the equipment. We've simulated tying it in, so that gives us an additional layer of confidence that we can deploy this equipment when it's needed.

And we've learned a number of things by doing those exercises and we'll continue to improve our procedures going forward.

To make sure we're doing all the right things, we're very well connected with the international industry on this. We're connected to the U.S., to the IAEA, and we're monitoring those bodies closely to make sure that what we're doing is the right thing. And, in fact, we're contributing to that discussion and we're actually leading that discussion in many areas.

And one of the things I want to make sure people realize is that our plants were safe. They were safe before and they're safe now.

But what we learned from Fukushima is the installed equipment is not enough. The public needs to be able to hear us answer the question, "What if?"

With this equipment that we've installed in our projects going forward, we're able to answer that question. We're ready for anything, and that's what we need to have in place after Fukushima.

I really want to thank all the people who worked on Fukushima right at the time. We had about 80 people right after the event working on it. They did some excellent work, allowed us to present in public that OPG was moving forward, that we were active, we were learning. We weren't complacent. All those people have continued to work for the last year to put these systems in place and we're very proud of what you've done, and I want to thank



you very much for your efforts.

**(END OF VIDEO PRESENTATION)**

**MR. TREMBLAY:** All right. Thank you.

And as promised, that was the last video.

Again, as Mark indicated, you know, this is typical of what's going on in industry. This is just an opportunity to show that it's more than just paper; it's actual hardware and equipment.

So in terms of the report -- and for the record, my name is Pierre Tremblay. I'm the Chief Nuclear Operating Officer for Ontario Power Generation, and I have with me Laurie Swami, who you heard from earlier, Vice-President, Nuclear Services and, of course, Mark Elliott, who you saw and heard as well, and as well as a number of support staff to answer questions.

Thanks for giving us the opportunity to address the Commission. OPG considers the Annual Industry Report to be an important document for public communication about the safety of our facilities.

It's clear to us that the annual report continues to evolve and last year's report, the 2011 report, includes additional references to industry benchmarks and provides an improved basis for demonstrating the overall solid performance of the Canadian operators.

These changes to the reporting structure also provide better context for the public to understand the performance of our stations.

At OPG, safe and reliable operation remains our number one priority. I am pleased to report that in 2011, OPG had exceptional performance in all safety areas of conventional, radiological, environmental and public safety. Darlington achieved 12 million hours without a lost-time accident, while Pickering B achieved over 7 million hours prior to the amalgamation of the site.

The facilities are on their way to similarly excellent performances in 2012.

Darlington's performance continues to be at a very high level of international safety and reliability performance, and this is recognized in the CNSC staff's assessment of fully satisfactory as an integrated plant rating. We appreciate the recognition.

Darlington's four units achieved a combined forced loss rate below 1 percent, in fact, 0.6 percent, and that's an exceptional result for any power plant.

In addition, through the use of innovative dose reduction techniques, the plant greatly reduced staff radiological exposures in 2011.

Similarly, at Pickering, we note the satisfactory rating in all areas. Our primary focus at

the plant has been on maintaining our strong safety performance and on improving reliability of our units.

Through the amalgamation of Pickering A and B and a sharp focus on continuous improvement and equipment reliability, in 2012 we're starting to see more consistent results. The consolidated plant is on track to meeting its improved reliability targets for 2012.

We are executing the continuing operations plan for Pickering and have had a number of successful inspection and maintenance outages. The plan remains on target and will be discussed in more detail during the relicensing for the site that will take place next year.

Regarding the issue of certified training for Pickering B that was highlighted in the CNSC's presentation, the issues are not around the qualifications and the capabilities of the current certified staff but, rather, deal with aspects of our initial certification training program.

We are and will continue to work with the CNSC staff to ensure a well-documented and effective training program.

I would like to take this opportunity to share with the Commission a number of significant regulatory activities completed in 2011 or that are currently underway at OPG.

Firstly, as was presented earlier, Pickering now has an effective fish diversion system in place. This demonstrates our commitment to environmental stewardship.

As you will hear in more detail later, OPG -- well, we have talked a bit -- we moved the video forward here, but we talked about the progress at addressing the lessons learned of Fukushima. There's more to be done, clearly, and as was laid out in the plans, but we are very committed to continuing in that area and leading the world in our response.

Ongoing and open dialogue between ourselves and the CNSC staff, in fact the entire utility base, has enabled a much better outcome for the Canadian nuclear industry and we encourage this process to continue.

We have a busy regulatory schedule ahead of us with the November public hearings for the Darlington waste management facility and the Darlington station licence renewal, and with the Darlington refurbishment environmental assessment public hearings.

Finally, in 2013, activities related to the licence renewal of the Pickering station will take place, as well as the expected environmental assessment hearings for the low and intermediate waste deep geologic repository at the western site.

In summary, OPG is committed to safe operation of its facilities and in meeting all of its regulatory requirements and obligations. Solid safety performance in 2011 translated into solid overall plant ratings.

We're now available to answer any questions you might have.

Thank you.

**THE CHAIRMAN:** Thank you.

Next, we would like to hear from Bruce Power and I understand that Mr. Duncan Hawthorne will make the presentation?

Please proceed.

**MR. HAWTHORNE:** Good morning. Welcome. I'm Duncan Hawthorne, President and Chief Executive Officer, Bruce Power.

I have with me today Frank Saunders who -- I know the Commissioners are well aware of -- is our Vice-President from Nuclear Safety. Also, sitting behind me, I have Gary Newman who is our Senior Vice-President and Chief Engineer. And I'd also like to introduce the Commission to our newly minted Chief Nuclear Officer and Executive Vice-President, Len Clewett, who is here in front of the Commission for the first time today.

I'd like to echo many of the comments that

Pierre made earlier. I think he very -- very well articulated the view of this Annual Report. I think it's an excellent process. It's very unique here in Canada that we do this thing.

In a general commentary, I would say that one of the things that's been very clearly articulated in the aftermath of Fukushima is the important role the regulatory framework plays. I think it's very clear that Canada has come out very well in that comparison not the least of which is this very forum that we hold here today. It's been very obvious in the earlier feedback from Fukushima that an active well-informed regulator is a very important feature of safe operation.

And, as I say, I don't put too fine a point on it. I've been in many international forums where Canada's regulatory regime has been held up as an example to others and I think it's important that we acknowledge that here.

Speaking for my own plant, from a Bruce Power point of view, of course, we're pleased to see progress that we've made being recognized in this report today and, in particular, in the area of radiological protection.

We were before this Commission previously talking about our Alpha Event which was tremendous

learning opportunity for us and, indeed, the industry at large and, you know, we have made improvements in that area.

I don't believe we're even close to where we want to be on radiological protection programs largely because we are managing aging assets. As a consequence of that, we're doing a lot more radiological type activity and we all have to recognize that it's very important that our programs and processes acknowledge that increasing radiological activity.

So we still have, you know, a significant amount of intentions with regards to source term reduction and just overall radiological standards on the site. But, nonetheless, we're pleased to see that the Commission acknowledged progress made to-date.

Of course, it would be wrong to summarize Bruce's year without mentioning the re-start. It's been something I've been in front of the Commission off and on. I wish I'd been able to tell you that we're finished. I think we're closing in on the finish line but, much like the Canadian team, we've stepped on a line a few times here and there and set ourselves back a bit.

We are close now. Both reactors are critical. Unit 1 will be shortly going into the warm-up situation as we move towards, first, commercial operation

of that unit.

In response to the question, earlier, I explained where we are on Unit 2 but both of these units we expect to achieve commercial operation in Q3 of this year after which we look forward to a period where we can focus on 8-unit operation.

Thank you.

**THE CHAIRMAN:** Thank you.

Next -- je m'excuse, maintenant, c'est le représentant de Hydro-Québec. On m'a dit que c'est Monsieur Désilets qui va faire la présentation.

Alors, vous avez la parole.

**M. DÉSILETS:** Monsieur le président, mesdames et messieurs les commissaires, bonjour.

Pour le verbatim, mon nom est Mario Désilets. Je suis Directeur, Production nucléaire chez Hydro-Québec, Production.

Je suis accompagné aujourd'hui par monsieur Patrice Desbiens, Chef des services techniques à la centrale de Gentilly.

Pour la deuxième année consécutive, nous recevons la cote de 'rendement satisfaisant' dans chacun des domaines réglementaires de sûreté. C'est le résultat de beaucoup de travail réalisé avec méthode et discipline.

Je profite de ce moment pour remercier tout



le personnel de la centrale qui y a contribué.

Tel que souligné dans le rapport de rendement, les sujets en suspens et listés dans le dossier -- dans le tableau H-15 lors de l'exercice du renouvellement de notre permis d'exploitation ont été réglés.

Hydro-Québec a aussi poursuivi, depuis l'audience de mai 2012, l'avancement du plan d'action découlant du rapport sur Fukushima. Par exemple, les équipements de mitigation en cas d'urgence, comme les pompes et les génératrices portatives, seront livrées sur le site de la centrale dans la dernière semaine du mois d'août.

Nous sommes très fiers que le personnel de la CCSN note qu'une fois de plus un haut niveau de conformité a été observé dans le domaine du rendement d'exploitation Gentilly-2.

Je vous remercie. Il nous fera plaisir de répondre à vos questions.

**LE PRÉSIDENT:** Merci beaucoup.

I'd like to invite now a representative from NB Power to make the presentation. I understand that Mr. Pasquet will make the presentation.

Please proceed.

**MR. PASQUET:** Good morning, Mr. Chairman

and Members of the Commission.

For the record, my name is Paul Pasquet. I'm the Site Vice-President for the Lepreau Nuclear Generating Station.

Joining me for the presentation is Paul Thompson, Regulatory Affairs Manager.

The Annual Industry Report is very important to New Brunswick Power in order to demonstrate to the public the safety -- our safety and performance of our station. Safety is our number one priority and we welcome the annual CNSC evaluation to confirm that our practices meet or exceed national nuclear industry standards.

The station overall rating is consistent with the other nuclear plants. We believe the report accurately reflects the station's safety performance for 2011 and we're pleased to achieve a "satisfactory" rating in the areas of emergency, management and fire protection in this year's evaluation.

The CNSC Report also examined the responses of the Canadian nuclear plants to the events of Fukushima, Japan. The report concluded that all Canadian plants are properly prepared for natural disaster and do not pose an unacceptable risk to the health and safety of the public.

We recognize that the CNSC has also asked

operators to again review external hazards including seismic events like earthquakes, flooding, fire and extreme weather events as well as measures for the protection and mitigation of severe accidents and emergency preparedness.

As stated by the CNSC staff, New Brunswick Power is conducting a site-specific seismic hazard assessment requested by the CNSC in the Point Lepreau license renewal decision.

As already stated, the preliminary results are expected to be available by the end of 2012.

It is important to note that the station upgrades and improvements that were made as part of the refurbishment project addressed many of the lessons learned at Fukushima.

I'd like to take a moment to share some of the significant accomplishments that we've completed in 2011.

Safety assessments were included which looked at design -- beyond design-based accidents and severe accidents including external events. Upgrades were made to the seismic robustness of the plant. Installation of a Calandria Vault Make-Up Line and emergency filter vent were installed.

Installation of autocatalytic hydrogen

recombiners in containment were installed and, also, the installation of a third stand-by generator was also included as part of the plant refurbishment.

Thank you very much for the opportunity to address the Commission.

**THE CHAIRMAN:** Okay. Thank you.

Let me just do a little time check. From here on, we have lots of questions, I can assure you, and what we would like to do is we'd like to start a round of questions by Commissioners then maybe break for lunch.

Hopefully, all the -- our friends from NRCan, Emergency Management Ontario, Health Canada, Ontario Ministry of Labour and the Durham Emergency Management will be with us after lunch.

And, we are going to hear from the -- we are going to go through the intervention with some of the questions associated with intervention and, then, the last round of the Commission.

So I would like to start with see how much we can do for the next 15 minutes or so with Dr. McDill.

**MEMBER McDILL:** Thank you, all, for the long and detailed presentations.

I have quite a number of questions but I'll start with two but, of course, they have sub-questions.

And I'm going to link my questions to at

least one of the intervenors in each case because I think it makes better use of time.

When Staff gives its ratings of "satisfactory" or "fully satisfactory", there are questions in the interventions about how that can be possible with the number of forced outages, the number of set-backs, the number of step-backs, the number of S-99 requests.

So I think it's a good question for the public. How does -- how do we reconcile these bumps in the road, if you like, a necessary part of operation with a fully satisfactory or satisfactory rating?

And I guess each of the operators could answer, if they want to add, in turn.

**MR. RZENTKOWSKI:** Greg Rzentkowski for the record.

The overall plant rating is established based on the assessment of almost 1,500 observations stemming from our compliance activities such as surveillance, inspections, desktop reviews and also event reports.

As a result we generate an average for each safety and control area, and this average is well supported by all the observations and activities conducted in the field.

There are always some bumps in the road because that's why the compliance process is in place. And in this particular case those bumps in the road refer to the operation of the plant.

So those issues are the normal operating events which are expected to happen not only during a given year but generally during a normal operation of the plant, and they reflect very often on -- positively on the safety of the plant because that means that all the system responded as designed, bringing the station down to the safe shutdown state.

So this only confirms the existing safety case as being valid and very well applied by the licensees. There is never a safety concern behind those operational events.

**MEMBER McDILL:** So, if I can ask how -- let me get the right quote here -- on page 4 of Mr. Kleinau's intervention, he makes a very strong comment, "What a dismal, almost criminal record of safety violations." I think that has to be addressed.

And I realize we're not doing the interventions, but it does sort of fit in to the question.

**MR. RZENTKOWSKI:** This is in CMD?

**MR. LEBLANC:** Yeah, 12-M40.7.

**THE CHAIRMAN:** But to keep the -- to keep

the question more generic, you got 1,500 observation, you got 20-30 S99, blah blah blah. Is it a subjective assessment or there's a science behind those ratings, that you come in -- and obviously not all the safety and control areas have the same weight? So maybe you should talk a little bit about the methodology of arriving at those -- at those ratings and assessment?

That you can see when you have a -- a 20 S99 in one year, it begs the question.

**MR. RZENTKOWSKI:** Yes, S99 responds to the mandatory reporting requirements. But the mandatory -- the S99 Report, doesn't really imply that there's a violation of regulatory requirements. The safety assessment is conducted against the regulatory requirements and regulatory expectations, and only when those are not being met, this will affect the safety performance of a given safety and control area.

So what we do, we integrate all the results and we calculate an average for a given safety and control area. Next, to arrive at the integrated plant rating, we again integrate all safety and control area into one rating. And here we apply also weighing factor because as it was stated by the Mr. President, not every safety and control area has the same effect or the same impact on the overall safety performance of the plant.

So there is a complex, complex analytical process behind this methodology.

And the last step is, of course, application of the engineering judgment because numbers are only as good as the input parameters so -- so at the end, we really have to decide if this makes sense.

Thus, all regulatory program directors assess the performance in a given safety and control areas all across -- horizontally across all operating facilities. And this is generally the process which we apply to decide on a performance rating of a plant.

**MEMBER McDILL:** So, maybe the operators could then, if they wish, add something to each of those?

**MR. HAWTHORNE:** Dr. McDill, can I comment? Given that Ziggy Kleinau's comment are all about the Bruce site so that -- so it's more specific ---

**MEMBER McDILL:** There are few but others there.

**MR. HAWTHORNE:** Yeah, but -- but -- you know -- you referred to Mr. Kleinau's things so I think it's reasonable for me to try to respond to that piece.

You know, for me I think there an issue about how you explain things to reasonable general public people who want to understand this thing, and then there's another part of which is how you deal with people who have



very clearly got an antinuclear sentiment and nothing you do will ever be correct.

But I'd rather address the -- the reasonable person and say, for me, the question you're trying to answer in this report is what makes a safe industry. And what makes a safe industry for me is -- is a well-designed plant, properly regulated and operated to the highest standards.

I think when you look at the particular comments in there, things that'll seem to be negative are actually indicative of exactly those things. Setbacks and step-backs are actually the plant doing what it's designed to do safely and properly.

The recording of S99s is a very open, transparent, low-level industry culture which is something that you want to foster.

We want to have operators report. We want to be transparent and open because in that we -- we do give the public a feeling that we are -- that we're available for commentary and we're being very open.

So again, I think you see that in a number of S99s. If we had a much smaller number I think we'd be somewhat concerned that -- that we weren't being transparent.

But I do think there's a question about

what makes operating performance. If you take, for example, the Bruce site which -- as I say -- Mr. Kleinau's picking out -- if I look at the report and look at your own tables with a view of transparency -- if I can take you to page 17 and look at your own tables -- the very plants that he's talking about have got the lowest number of unplanned transients of any of the plants in the fleet. They have the UCLF numbers so you can see that Bruce won a steady performance round year after year after year for the last four years.

And so the operating performance suggests here a plant that's improving its performance, our operating reliability's gone up, our forced law straights is going down, our equipment reliability has gone down, our maintenance backlogs have gone down. What hasn't gone down is our number of S99 reports because we don't intend to have those go down. We intend to lower the threshold to keep that going.

So I think that perhaps there is a very legitimate point that you make about how do you actually articulate just with an SA and an FS, those sort of things, it is a challenge for us.

But the very dialogue we're having today and the record of these discussions hopefully present -- like -- in a more fulsome picture than -- than we could

really ever do justice to.

I know -- I know Chairman Binder has said before, "Can we just give every plant a number? Wouldn't that be good?" But we'll have the same question about "How did you get to that number?"

Ultimately, I think you've got to take this report plus the record of proceedings and the questioning and explanation and see all of that in total representing a view of how this industry's operated and regulated.

**THE CHAIRMAN:** Mr. Jammal, I notice that you want to say something.

**MR. JAMMAL:** This is Ramzi Jammal for the record.

Dr. McDill, you asked the question with respect to page 4 on the allegation made by the intervenor, "... a dismal, almost criminal record of safety violations."

The CNSC is the only regulator in the world and on the international scene. The CNSC has always been given good practice on transparency. As a matter of fact a lot of regulators say, "What price do you pay of such transparency?"

We don't pay any price because we -- we take pride in our transparency. And it's very easy to take a list of events, S99, transform and manipulate data based

on perception or I'm going to go as far as to say fiction. As staff has indicated these are reportable events; we enforce and require the operators to report it to us -- the events. We evaluate the safety significance because we do not compromise safety and we will never compromise safety. Our job is to ensure safety is maintained at all times.

So when we -- someone take advantage of transparency and tried to manipulate the fact that there has been reportable event in a very complex technology where each site has thousands of valves, thousands of metres and kilometres of piping over 800 employees that are engaged in one way or the other in the operation.

So, those are significant detailed reporting events for us to monitor, for us to evaluate, for us to grade and determine if there are safety significance. We will take the appropriate action.

So, as the Chief Regulatory Operation Officer of the CNSC and responsible for the safe operations, I don't take this lightly. I do not accept such allegation because it's transforming a scientific assessment done by staff in addition to what currently have done by staff. The CNSC and its regulatory framework and its regulatory compliance activity has been reviewed by international inspectors from the IAEA and we got

nothing but good practices.

But again, this is a presentation with no consequences except that there is a perception based on a number without any evaluation and that's very easy allegation to make.

**THE CHAIRMAN:** Anybody else in the operator world want to say something?

**MR. TREMBLAY:** Pierre Tremblay for the record.

I obviously can't speak on behalf of Bruce Power. Duncan's remarks, though, were right on.

You know, I think the other thing for us to keep in mind is this is in a context of power plants where their safety systems have all met their reliability requirements. And we have a very interest in low level reporting and so there's a lot of material to sift through.

I think the answers rely on a safety significance and the assessment of that. And this isn't an industry that has complacency at its heart. Look at the response to the events of Fukushima. Now, we're always looking to get better in our focus areas. Whether we're satisfactory or fully satisfactory, there's still lots of room for improvement and that's how we focus our management team and so it goes.

So, I think that transparency is important. We need to put it out there, communicate with staff, recognize that those who perhaps have a different view, will look at the data differently.

But, you know, I think that the safety significance of the events and even the early notification reports, as the presentations were being made today, I made note of the fact that the conclusion from those was that there was no safety -- public safety significance of the events that were discussed and reviewed thoroughly and committed to by the licensees.

**THE CHAIRMAN:** Thank you.

Anybody else?

**MR. RZENTKOWSKI:** I would like to add to my previous response. In my previous response, I indicated that we took into account over 1,500 findings that include S99 reports. More than 99 percent of those findings were either positive, negligible or of low safety significance.

**THE CHAIRMAN:** Thank you.

Dr. McDill?

**MEMBER McDILL:** I can hold my hold my other question until later, thank you.

**THE CHAIRMAN:** Okay. We'll try one more commissioner before lunch.

Monsieur Tolgyesi?

**MEMBRE TOLGYESI:** Merci monsieur le président.

On page 15 of the staff report -- I'm talking about fitness for duty -- but you are saying that "Licensees have various methods of assessing fitness for duty but the provisions differ significantly between licensees."

What's the intent of the Commission? Are there any plans to standardize that, that make sure that you could compare those performances?

**MR. RZENTKOWSKI:** I would like Mr. André Bouchard to respond to this question.

**MR. BOUCHARD:** André Bouchard for the record. Thank you for the opportunity for this question.

The Commission has published and is still in consultation for a discussion paper on fitness for duty currently up to the end of the month. By the way, that's a plug.

So, yes, there's an intent for the Commission to move forward, an initiative to improve its regulatory requirement and fitness for duty. These improvements to the regulatory requirement would obviously fill in what we perceive to have identified as high-level requirements that currently exist but missing a bit of the details that would bring in consistency across licensees.

**MEMBER TOLGYESI:** When I'm looking at page 19 is "Trend details for unplanned capability loss factor for stations" and when I see that Pickering and Gentilly 2 are -- the factors are much higher than for two other stations. Could the staff explain what reasons are there?

**MR. RZENTKOWSKI:** We'll start first from Pickering. Mr. Miguel Santini, the Director of Regulatory Program will respond to this question.

**MR. SANTINI:** This is Miguel Santini for the record.

With respect to Pickering A, one factor would that we must consider is the age of the station. As you know, Pickering has been commissioned and put into service in the early '70s and there has been recurring problems of reliability. Perhaps OPG should address this question more than ourselves.

That causes the station -- because of reliability of equipment -- to have to be taken out service for repairs, for replacement of aged components, et cetera.

**M. RINFRET:** Je peux vous répondre en français? Je vais vous proposer la même chose, c'est d'aller demander à Hydro-Québec leur interprétation de cette donnée. Mais il faudrait insister que ce coefficient-là -- le coefficient indique que des



circonstances qui démontrent une certaine incapacité ou un manque de contrôle général autour d'une capacité de produire de la puissance. Donc, ça peut être lié à un problème d'entretien mais cette même décision qui était sous le contrôle de la Direction de la centrale.

**MEMBER TOLGYESI:** Avez-vous quelque chose à ajouter monsieur?

**M. DÉSILET:** Mario Désilet pour le verbatim.

Les données que vous voyez là et la raison pour lesquelles c'est plus élevé que les autres c'est que ces dernières années, nos arrêts ont du être rallongés parce qu'on a trouvé en cour d'arrêt des problématiques qu'on a du régler.

Alors ça, ça fait partie du coefficient de perte de capacité. Alors, quand on a un arrêt qui est prévu de terminer à une date et qu'on doit le prolonger parce qu'on a d'autres problématiques qu'y faut régler avant de redémarrer, bien, ça entre dans ces statistiques-là, là.

Et la raison pour laquelle Gentilly vous voyez qui est élevé, bien, nos données des dernières arrêts c'est qu'on a trouvé, lors des arrêts, des problématiques qu'on a du régler avant de redémarrer.

**MR. TREMBLAY:** If I might?

There was a question around Pickering and I'd like to deal with that one. So, Pierre Tremblay for the record.

I talked briefly about this in my opening remarks, talking about the focus of the Pickering. And, you know, I've appeared before the Commission a number of times talking about the overall reliability plan for the fleet that is OPG's nuclear plants and, really, we're applying and have applied the same basic approach as we've applied at Darlington which is showing so much success. The Pickering five to eight units which are operation at a much lower force loss rate and have been continually improving over time.

We are starting to see some improvements at Pickering. The one to four units were the ones that we're particularly focused on. We've essentially revisited the preventive maintenance program. We've looked at our specific vulnerabilities, those elements that have contributed to the force loss rate and we've built into our program -- and you'll be hearing about that during the relicensing hearing for the facility -- an element called 3k3 which focuses the work orders and work team on dealing with those reliability issues.

And, as I mentioned earlier, so far, in 2012, the entire site is on a target for its reliability,

we're starting to see that. Some of the specific components that we've been focused on have been balance of plant issues around the conventional plant which have been problematic, as well a few handling systems given the impact they've had on the reliability of the plant.

So, I'm confident we're heading in the right direction, we've certainly got the support of our Board around investment in that facility to get payback and I'm certain we will see continuing improvement from the plant.

**MEMBER TOLGYESI:** I have two short ones. One is on the page 24, you are saying by the end of 2011:

"Thirteen (13) safety issues out of 21 remain to be reassessed; four were related to large loss of coolant accidents."

What is the safety significance of these losses and are there deadlines to say that when it should be completed?

Page 24, last two lines, last paragraph at the bottom.

**MR. RZENTKOWSKI:** There are many safety issues, which are under assessment right now, but we have to understand that those safety issues don't really question the safety case of operating reactors. They are

safe. We are only reassessing them in the view of new knowledge or state of the art technologies.

For example, yesterday, we were talking about the implementation of the best estimate and uncertainty methodology in our analysis. This is the international standard these days. So we, as the regulator, are really obligated to look at those new methodologies and apply them in practice.

So, in other words, those safety issues present opportunities for improvements. That's how we have to look at them.

**MEMBER TOLGYESI:** And my last question is to the gentleman from -- Minister of Labour because he -- on page 8, we are talking about number of critical injuries. What's a critical injury and how it relates to the frequency and -- how do you define that?

**MR. DOEHLER:** Thank you. It's Lothar Doehler, for the record, on behalf of the Ministry of Labour, Ontario.

We actually have a regulation that defines what a critical injury is. It's Ontario Regulation 351/91. And I will list all the elements that could be termed a critical injury.

"A) Places life in jeopardy.

B) Produces unconsciousness.

C) Results in substantial loss of blood.

D) Involves the fracture of a leg or arm but not a finger or toe.

E) Involves the amputation of a leg, arm, hand, or foot, but not a finger or toe.

F) Consists of burns to a major portion of the body.

G) Causes the loss of sight in an eye."

With respect to frequency, there's -- you know, there's no -- I'm not sure whether you want that compared to workplaces of similar sizes. I don't have those numbers, but those are the seven elements of defined critical injury.

**MEMBER TOLGYESI:** So what you are saying that there were two critical injuries over 29 which happened during the last year to the nuclear power generating stations?

**MR. DOEHLER:** Yes.

**MEMBER TOLGYESI:** And what's the frequency of these loss time injuries for the stations globally?

**MR. DOEHLER:** I don't have those exact numbers. We are comparable to what the licensees

reported. But we did note a discrepancy in one case and we're currently -- both the licensee and ourselves are looking into the reason for that discrepancy because it's coming from the same source. So we should be able to resolve that discrepancy in the near future.

But the numbers are relatively low when you look at an overall workplace average. I believe the rate is 1.4 loss time injuries per 100 workers, and the numbers for the nuclear power plants are substantially below that average.

**THE CHAIRMAN:** Okay, I think it's a good time to break for lunch. We will return in 45 minutes. That will make it 1:35.

Thank you.

--- Upon recessing at 12:53 p.m./

La réunion est suspendue à 12h53

--- Upon resuming at 1:38 p.m./

La réunion est reprise à 13h38

**THE CHAIRMAN:** Okay, can we get going please? And I apologize for the short lunch, but we have a long afternoon in front of us here.

So why don't we continue with the question period and Monsieur Harvey, c'est à vous s'il vous plaît.

**MEMBRE HARVEY:** Merci, monsieur le président.

The first question is about ENR. When we look at it, everything is satisfactory and we're very happy to see that like this, but there are some other indicators that, I don't know -- like the ENR. What can we do by the fact, just for example, that Pickering last year had 11 ENRs, which is more than double the others, even more than that?

So is it a question of aging or management or accident? What can we deduct from that? So I will maybe ask the staff and then maybe ask OPG to answer, to explain it.

So, first, I would like to have your comments.

**MR. RZENTKOWSKI:** The criteria for reporting ENRs are not related directly to the safe operation of the plant. Actually, the most dominant or the major criterion is the public interest or the media interest. Most of ENRs reported for Pickering were in response to the media interest. Nevertheless, the number of ENRs reported from Pickering were far greater than for any other site.

In my personal opinion, this could be a reflection of aging reactors and more operational events

than in other plants, and of course those operational events very often trigger media or public interest.

I think this is really the bottom line here why we had so many reports from Pickering.

**MEMBER HARVEY:** Mr. Tremblay?

**MR. TREMBLAY:** For the record, Pierre Tremblay.

Certainly, we've taken a look at ENRs and the distribution of the issues and I think Greg's comments are accurate. There's a number of these that are essentially very low from a standpoint of any implication but could attract media interest, and so we're there.

I guess what I would say is there are six reactors at the site, large site, lots of opportunities but the focus for us is really on reliability of plant. A number of the ENRs and of the shutdowns that are talked about and discussed in various forums were as a result of conservative operator actions, where something is not right and in conservatism we take the plant offline to have a look at it and so on.

So the focus is really for us on reliability. You know I -- and certainly our observation and our focus has primarily been on Units 1 and 4. Certainly, Unit 1's performance has improved significantly over the last 18 months or so.



Unit 4 remains a challenge and one of the things that we've done, as an example, is we've introduced a mid-cycle plant outage on the 1 and 4 Units, recognizing that we need more access to the facility to upgrade, to change up components and have really some extensive programs to overall equipment.

So we're watching it carefully, do acknowledge the fact that there were more events. None of them were really what you would call the safety significance, but certainly there are multiple criteria. It's a fairly low reporting threshold and our focus is on the reliability side of that equation.

**MEMBER HARVEY:** Thank you.

The other one is about equipment quantification. It's on, I think, page 18. No, that's 25, yeah.

We do agree that the equipment qualification is something very important and we can see there, the second paragraph -- the last paragraph of the page, "Currently, environmental qualification program compliant with CSA have been fully implemented at all NPPs except Gentilly 2 and Bruce." Well, this is -- first part of my question, why?

And the other part of my question is maybe the most important, is the other paragraph there; because

the stuff you say that it is recognized that some challenges exist in regard with the equipment qualification preservation. And -- but it is also acknowledged that licensees are evaluating and resolving identified equipment qualification issue to answer.

So it's like we recognize something but they will take care of that. So I'm trying to -- did you find the place? Do you see we recognize there is problems and -- but we know they will fix it. So could you just explain that?

**MR. RZENTKOWSKI:** Yes, we understand the question very clearly. The question pertains to Units 1 and 2 at Bruce A which are undergoing refurbishment. Actually, the refurbishment has been complete and now they are in the process of being restarted. And the question also pertains to Gentilly 2 station which is preparing for the refurbishment. So the situation with those units is somewhat unique. And I will ask regulatory program directors to describe this in details. We'll start from Bruce A.

**MEMBER HARVEY:** Just -- that second paragraph was very specific to Bruce, you mentioned?

When you see there is some problems, but we recognize that they're working -- it was for Bruce?

**MR. RZENTKOWSKI:** No, it's more general in

nature to address those deficiencies in environmental qualification programs. Because there are some underlying issues and the regulatory program directors will describe them.

**MEMBER HARVEY:** Okay.

**MR. LOJK:** Bob Lojk, for the record. I'd like to put two hats on. I looked after the environmental qualification program for about 10 years so -- until I came to Bruce so I can kind of give you a little bit of background on that.

But the reality is, it's a program that when we started a dozen years ago out of results Three Mile Island, for instance, it wasn't very well understood. And it was -- it grew organically as it went by and licensees spent billions of dollars in this program. And I'm using the word billion not loosely here, in fact it was billions.

And as we understood more how the system works over the years, enhancements were made to the program. But right now, at this point, except for G2 which, again, it's had certain issues that haven't been looked after -- I'm not speaking on behalf of G2 because traditionally, they were waiting for the refurbishment.

I can tell you for Bruce that the systems -- as the systems are put in place, the environmental

qualification programs, our staff goes out there and checks them out -- our technical staff -- and finds them acceptable or unacceptable and the corrections are made.

The environmental qualification is vital to the operation of the plant. So what this alludes to is that it's a very, very complex program that's very, very hard to maintain and enforce. It costs a lot of effort both from a regulatory point of view and from a -- and from, presumably, a licensee point of view.

So while the challenges exist, the licensees all have a very, very robust program that we over the last 10 years ensured that they had in place. So I hate to say that our regulatory due diligence has been done, but we worked together to ensure these programs are very, very robust.

And now we make sure that the licensees follow the programs that have been put in place thus ensuring a good product. And on a regular basis, both small type 2 inspections and very large inspections requiring many team members are done to ensure that the program is in fact -- the type 2 inspections ensure the compliance to the existing program and the type 1 inspections to ensure the program still remains robust.

So while things are continuously being found, discovered via analysis or whatever. Cables are

being investigated; the CNSC even has a cable research program in place to confirm the validity of some of the assumptions made in terms of the robustness of the cables that are being used in nuclear plants.

I can assure you -- and I can assure you practically for every plant that the systems that are in place are extremely good, extremely robust. And in the event of a main steam line break, for instance, which is what this refers to, that the plant will be able to shut down -- safely shut down, cool, contained and be monitored. Because all those systems are rugged, tested, checked with special maintenance systems and special engineering backing them up.

And in any case, when they find something like an open door in some facility where you have to be separated, immediately measures are in place to ensure that that is monitored or those systems are validated as being a non-essential or backed up or compensatory measure provided ---

**THE CHAIRMAN:** Okay, look, you're losing me, all right.

**MR. LOJK:** Okay.

**THE CHAIRMAN:** First, tell me what is equipment? We're talking about the public here, what's equipment qualification, what does it mean?

**MR. LOJK:** Okay, equipment qualification is a system where the ---

**THE CHAIRMAN:** Which equipment?

**MR. LOJK:** Equipment: motors, pumps, switches, mostly motor-controlled valves, panels and electrical supplies.

**THE CHAIRMAN:** Good, so how do they relate to the safety concern expressed here, there's challenges?

**MR. LOJK:** That equipment needs to be brought properly, installed properly, maintained properly, and has a finite life.

**THE CHAIRMAN:** So what's the challenges?

**MR. LOJK:** The challenges are that because of the large, broad nature of the program, sometimes things get missed. So it requires extreme vigilance in order to ensure that all the Is are dotted and all the Ts are crossed.

**THE CHAIRMAN:** Bruce, Mr. Duncan?

**MR. HAWTHORNE:** So let me just try to have another go at it. The EQ came about because of an assessment looking at internal hazards, things that weren't in the original design. Hot steam release, fire protection, all of those things. Bob's right, operators spent billions of dollars upgrading hot steam release capability to make the equipment robust against fire and

other things.

We are doing that as part of the restart of 1 and 2. So as part of getting approval to start, we have to fully EQ the plant. I think the point is that once you have EQed the plant, every time you go and work in a room that's EQed, you have to be careful not to disturb it. You might run a cable and disturb a fire barrier that's part of EQ. You might make a connection.

That last paragraph is all about recognizing the ongoing challenge of maintaining the qualification that you invested in.

**THE CHAIRMAN:** Thank you.

M. Harvey?

**MEMBRE HARVEY:** Hydro-Québec aimerait commenter?

**M. DESBIENS:** Patrice Desbiens, chef des services techniques à Gentilly.

Un peu comme il a été dit, tous les équipements de la centrale qui ont une fonction directe sur la sûreté ont été identifiés il y a déjà de nombreuses années et ont tous été qualifiés pour des conditions d'accident dans le bâtiment réacteur.

Puis il y a d'autres équipements qui ont été prévus de modifier pour les mêmes raisons, mais qui ont pas une fonction directe de sûreté, mais qu'on

souhaiterait qu'y fonctionnent quand même en cas d'accident. Et on a une planification qui s'est échelonnée au cours des derniers arrêts annuels.

Puis même -- même en marche normale, on fait ces transformations-là et ça s'échelonne, ça continue encore maintenant. Et notre engagement, c'est une condition de redémarrage suite à notre réflexion, c'est que tout soit complètement terminé à ce moment-là.

**MEMBRE HARVEY:** C'est que vous aviez pas un programme formel qui comprenait tout ça, c'est ce que je dois comprendre?

**M. DESBIENS:** Patrice Desbiens.

C'est-à-dire que le programme formel a été développé dans les années 90, mais pour se rendre conforme à notre programme, il y avait des années -- de nombreuses années de travail à faire. Puis on suit cette planification-là depuis. Donc c'est pas complété, mais on est où on est supposé être en date d'aujourd'hui.

**MEMBRE HARVEY:** Merci.

**THE CHAIRMAN:** Ms. Velshi?

**MEMBER VELSHI:** Thank you.

So I have a few general questions, but first of all, I'd like to start off by congratulating and complimenting the licensees and their regulator for this tremendous achievement where even as a minimum, everyone



has met the satisfactory requirement in each of the safety and control area. So that's really good stuff.

So the first question is on, has there been an external validation of the methodology? So have you got a stamp off the champ from someone else?

**MR. RZENTKOWSKI:** No, the methodology was developed here internally, and it's really somewhat unique because I am not aware of any other regulatory agency using this kind of approach to assess the safety performance of the licensees.

And I want to stress the point as well that the last step in the methodology is the application of engineering judgment because the methodology may be misleading due to the input parameters used or may be misleading even due to some underlying assumptions. Because of that, we apply always engineering judgment to rebalance the plant performance to make sure that we didn't miss the target.

**THE CHAIRMAN:** Sorry to interrupt here, but I'm surprised. I recall huge complicated presentations of internationally-originated methodology that was risk-informed, risk-based, where you came up with some calculations that, as far as I was concerned, were derived from what is safe and how do you define safety and risk from the IAEA guidelines.

**MR. RZENTKOWSKI:** That's okay. We use the guidelines for risk-informed decision making, which is -- in this particular application, is used for assessment of risk significance of an individual finding.

But then we have to integrate those individual findings into a single rating, and that's where the methodology is somewhat unique because this doesn't follow any guidelines.

Simply, it's a mathematical formulation which we apply here.

**THE CHAIRMAN:** But the underlying risk of each component was "à la" international guidelines?

**MR. RZENTKOWSKI:** Yes, the risk significance of every simple finding is based on IAEA guidelines, yes, that's correct.

And based on these IAEA guidelines, we also developed the internal procedure for risk-informed decision making process, and this procedure is very, very tightly coupled with the methodology we are discussing here.

**THE CHAIRMAN:** So if we are so unique, how do the -- I know the Americans also come in an annual, you know -- I don't remember how they characterized it, but some plants deserve less frequent visits from an inspector. I think this is the way they rank them.

What methodology do they use or the French or the British?

**MR. RZENTKOWSKI:** The general objective behind what other regulators are doing is to assess the performance of the reactors in order to decide on application of the compliance process, because the compliance process has to be both performance and risk-based.

In our situation, we apply the findings as well to assess the performance insights, but generally also we apply this to communicate to the public what is the safety performance of operating facilities.

And in this situation, it differs because it's much wider in scope. For example, in the U.S., they rely predominantly on the performance indicators. In our case, performance indicators are only one element providing information into the overall assessment. So it's significantly wider in scope. It's significantly more comprehensive.

**MEMBER VELSHI:** My second question is really both for the licensees and staff, which is what should be the desirable objective as far as rating in each of the safety and control areas?

And is satisfactory good enough, or as we go with continuous improvement, do we really strive for

fully satisfactory, recognizing perhaps that there's a correlation between that -- I'm hoping there's a strong correlation between that and safety and reliability of the facilities?

So I guess the first question is to the licensees. Is it part of your business planning something is set as a specific objective that we want to improve our ratings in these areas? And if not, if you can explain what the rationale is?

**MR. TREMBLAY:** Pierre Tremblay, for the record.

Clearly, the view of our licensing authorities is a principal preoccupation for us and, you know, and I understand that is a priority and importance.

You know, I think there is a judgment. We see the evolution of this assessment and report, looking at more and more factors. I think we've commented on the fact that the benchmarks provide good context around where we are relative to others in the industry.

The nuclear industry, speaking just for OPG, our objective is to be the best that we can be and we benchmark heavily, and so our expectations, our standards, are forever being challenged.

And so, you know, inside the organization we have about 20 or 30 measures, for example, that we look

at in a cornerstone arrangement, looking at various aspects of the business, and we look to improve our performance as we go forward.

We recognize that, you know, regulatory standards evolve. Things change. New information comes along, and naturally there's -- we hope there's a tendency for the entire bar to be raised as we go forward.

You know, I think there's some innovations in this year's report that bring some transparency. Even when you're meeting the mark and are fully satisfactory, that doesn't stop the utility -- it certainly doesn't stop us -- from driving for more improvements.

Having said that, there are issues, substantive issues that have been raised by the staff, by the Commission over time. They help guide us and, in some cases, recalibrate our efforts, and that's a good thing for the industry.

So the generally theme is improving performance. We're not looking to meet any minimum requirements; we're looking to excel. And we recognize that around the world, that's the attitude that this industry has, and so the bar is going to continue to be going up. And so for us to say this is good enough; we're okay now; we're just going to maintain, that's a dangerous game to play because you're just going to get past.

So without talking at length on this issue, I would agree with your general remarks around the need for continuous improvement, and we're very much embracing that, and I think we demonstrate that on a year-by-year basis.

**MEMBER VELSHI:** Anyone else want to add to that?

**MR. HAWTHORNE:** For the record, Duncan Hawthorne.

I think I've said this to you before that you won't find a book in the business section called "Regulate Your Way to Excellence". So I don't think that's what we're trying to do here. I think Pierre said it right, you know, the operators are looking for excellence and the regulator is looking for compliance.

But we've got a very unique situation in Canada where I think that because of the nature of the licensing framework, there is an -- the bar is being raised in the regulatory area in the same way as we, as operators, try and find the best practice to implement on our route to excellence.

My logic is the same as I know Pierre's is, which is if you're aiming at excellence, you won't bump out the compliance.

So I think we're all looking to improve

generally. That's what I said in my earlier remarks that we've got a very unique situation here where the U.S. is a rules-based regime. You pass or you fail and you're reported against that, and you're fined if you break the rules.

We've got a much more iterative process. Some things, it leaves it to exactly what Greg said; there is some judgment, but it's a healthy tension, if I can call it that, and that leads to the continual challenge to raise the bar, but it also leaves some greyness. There's nothing wrong with that, I think, if you have good well-informed debate but, you know, I can tell you from my part what definitely gets your attention is being below requirements, below expectations, but fully satisfactory isn't our destination for any of us.

I can tell you if you take the right protection example that we had, I could have taken issue with the CNSC's slate deck because it said rod protection improved because you wrote this. No, it didn't. It improved because we had an event and we wanted to respond to that and improve the safety and well being of our employees. It just so happened you agreed with us in the form of a letter, but the reality is the program improvement was driven from an underperformance.

And I'm sure if you looked to OPG's

business plans or New Brunswick Power's or ours, you would see targets that far exceed, you know, fully satisfactory, because we're aiming at, you know, excellence.

**MEMBER VELSHI:** Thank you.

**THE CHAIRMAN:** But I think Ms. Velshi is raising an interesting question, whether there are incentives for getting the fully satisfactory or maintaining at least a satisfactory level? Does the Board of Directors give you a standing ovation, Mr. Hawthorne, when you reach -- I don't know -- fully satisfactory or not? I mean, I'm trying to understand; is there any significance to this code that we're putting in place here?

**MR. HAWTHORNE:** In response to that, I'll tell you two things which -- again, I'm speaking on behalf of the licensees. We get more than one group of people telling us how we do.

WANO measures us against excellence. They identify a lot of areas for improvement. We take that WANO report in front of our Board. It's a very critical document because it's a measurement against the excellence and obviously we take the regulatory report there.

You know, as for a standing ovation, you get a standing ovation when you get to a destination. You know, this is journey as far as I'm concerned. You may



get recognition for progress made. You'll also get negative recognition for falling behind, but you know, I can tell you from my part, the only way out as standing ovation is when I'll get eight units running and, unfortunately, I'm not there yet.

**MR. PASQUET:** Paul Pasquet for the record.

I think there's also one other comment that I think we need to make overtly and that is the regulatory requirements are remaining static. And so we've talked about changes in regulatory requirements, we've talked about Fukushima, we talked about a number of things. So the requirements aren't remaining static, and so if you'd like to maintain the status quo, it means by definition, you have to improve because things are getting tougher. And so I think that's the other aspect that we haven't said overtly here.

**THE CHAIRMAN:** Thank you. Ms. Velshi.

**MEMBER VELSHI:** My last question for this round. It was very helpful to see the benchmarking in the report comparing the nuclear power plants with others -- the Canadian ones with others but also with other industries.

But there was some measures that there weren't any benchmarks shown and I don't know whether it's because the information is not available but something for

consideration for next time. Particularly for worker dose, there was no comparison with any other nuclear power plants; amount of waste generated, comparison there. And even with environmental performance, you know, where we say nuclear is green power or more friendly environmentally, there is no benchmark to show how the nuclear power plants compare, and I think that it would be helpful to show those kinds of things next time around.

**MR. RZENTKOWSKI:** Thank you for this question. We are currently in the process of revising the performance indicators, which will be included in the Regulatory Guide Document 99.1.

The new set of performance indicators will provide more information for benchmarking predominantly here between the operating sites in Canada.

So I'm hoping that in two years from now, we'll definitely have more graphs showing benchmarking.

**THE CHAIRMAN:** Thank you. Dr. Barriault?

**MEMBER BARRIAULT:** Thank you, Mr. Chairman.

If I can go back to slide 12 of CNSC presentation, and it's the trend in the trip -- reactor trips per 7,000 operating hours. I guess my question is trip a bad thing or a good thing in a reactor operation? Just yes or no.

**( LAUGHTER/RIRES )**

**MR. RZENTKOWSKI:** I wish I could say yes or no. Actually, there are two sides to the story. So it's yes because it's a good thing of course; You shut down the reactor.

But there is also a safety implication because you take the reactor through a transient, which is -- which something ---

**MEMBER BARRIAULT:** Okay, so in reality, it's because something has gone wrong with the reactor that it shuts down?

**MR. RZENTKOWSKI:** Something not necessarily wrong; something that's abnormal.

**MEMBER BARRIAULT:** Abnormal. Okay. We'll go from there, okay.

I guess the question I'm asking is why are we comparing ourselves to the average with WANO? We're saying, well, okay, we're average, we're good. We're good people. We do a good thing. When you want to compare yourself to the 10 best operators, ---

**MR. RZENTKOWSKI:** We don't have this information. We are receiving information from WANO in relation to the entire fleet of reactors.

**MEMBER BARRIAULT:** Okay.

**MR. RZENTKOWSKI:** I would be glad to compare into the top 10 percentile or whatever because we

have to strive for excellence.

**MEMBER BARRIAULT:** Exactly. Exactly.

**MR. RZENTKOWSKI:** This was discussed an hour ago that safety is an asymptotic safety goal; we have to strive to get there, but we will never get to that point because we will be complacent.

**MEMBER BARRIAULT:** Yeah, it's like saying "John is doing great in school. He's average."

And that's, you know, that's -- so anybody in the industry would like to comment on this? Duncan?

**MR. HAWTHORNE:** Just as a general statement. You should know that all of the WANO material is the property of WANO, and so there's a lot of places in the world that WANO could not operate if they were going to disclose, you know, identify ---

**MEMBER BARRIAULT:** Okay.

**MR. HAWTHORNE:** So all of this stuff is non-attributable -- it's not -- you know, Pierre and I could both list what those 10 plants were.

We both know that we're aiming for top -- went over this -- people are and when Pierre talked about benchmarking, that's where we go.

But for WANO's point of view, everything they put in the public domain is non-attributable for that reason.

**MEMBER BARRIAULT:** Okay. While we're looking at this, I'll draw your attention to page 17 of the presentation, CNSC Document 12-M40. And here, we are comparing ourselves internally in Table 3, and we find that some of them are above the international performance target. We've got Bruce A at 1.33 and we have got Pickering A at 1.5 trips per 7,000.

And I guess it begs the question, you know, why are these higher? I mean are they performing less than desire or what's happening here? Am I being bad in looking at this?

Page 17 for those who -- and it's Table 3.

**MR. HAWTHORNE:** With respect to the Bruce A numbers, I can certainly answer to that.

**MEMBER BARRIAULT:** Okay, yeah.

**MR. HAWTHORNE:** It certainly is the case that in 2011, Bruce Unit 3 suffered a number of plant trips. So we, ourselves, were unhappy with the performance of that unit over the course of that year.

**MEMBER BARRIAULT:** Okay.

**MR. HAWTHORNE:** The previous year had been our best performing unit.

But as a real measure of how reliable the unit ran over the period, so 2011 for Bruce Unit 3; one point as Pierre explained -- here is challenges in

Pickering 1 and 4 but not the same. Some plants go through that. And Unit 3 had a poor operating year in 2011 in that regard.

**MEMBER BARRIAULT:** Okay. And so far -  
- if we get down the line, Gentilly 2, vous n'avez pas eu de problème du tout? C'était zero?

Alors, if it's a good thing to have a low number of trips per 7,000 operating hour, then we should be flagging the ones we're doing well, as opposed to the average. I guess it's just my observation on that one.

**MR. TREMBLAY:** Pierre Tremblay for the record.

Just to kind of deal with that issue.

**MEMBER BARRIAULT:** Yeah.

**MR. TREMBLAY:** You're quite right.  
Certainly an automatic trip is a condition that we're trying to avoid, challenging mistakes in systems and so on.

And earlier, I spoke to Pickering, in particular, Pickering 1 and 4 in terms of the focus on reliability and clearly, not to get into, you know, all the details, there's a very sharp focus on specific components.

Every time there is an event, there's a, if you will, a transient review that takes place for the

operating staff to confirm that the right things have happened, what are the lessons to be learned. There's a technical and an organizational root cause that's done in terms of things that could be done to avoid it.

Each one of these events is significant internally, and we do a thorough and complete review. The best one to have is not to have it at all.

So you're quite right. We're very targeted on that. Clearly, there's a number of trips and shutdowns that are manually initiated when something really is noticed and detected. We want our staff to take those actions.

Having said that, the reliability of these units, they're base load generators. They're meant to be at full power and run breaker to breaker, and that's really the goal and the objective of the maintenance program as well as the human performance program at the plants.

**MEMBER BARRIAULT:** Thank you.

CNSC, I guess, it begs the same question that was asked a while ago. If you term that it's satisfactory if they're operating at average, in reality, some are operating at average and others are not.

Okay, and some are operating much better than average. So I don't know how you can reflect that

really in the assessment and appraisal really and flag it.

You know, I don't believe -- I believe in continuous improvement and I don't believe in punishing anybody because they're above average. But having said that, really, it should be clearer for us to look at this and say, "Wow, what's going on here?"

**MR. RZENTKOWSKI:** Yes, I will try to give the answer to your question, but maybe I'm not going to answer this directly.

Satisfactory rating maybe boring across the board because we have so many satisfactory, but boring is not necessarily bad here. Because satisfactory rating means that all licensees meet all regulatory requirements.

**MEMBER BARRIAULT:** Okay.

**MR. RZENTKOWSKI:** Now, fully satisfactory rating means in addition that licensees meet at least some of our recommendations or guidelines, which go significantly beyond regulatory requirements. This is really to stimulate the culture of continued safety improvements. That's why we do it.

But it's very difficult to get there because this is also a moving target. We can change our expectations because it's not a regulatory requirement, it's not stable. It's moving steadily in raising the safety bar and that's why it's so difficult to get fully



satisfactory rating.

So I want to stress this point again; satisfactory is a good thing.

**MEMBER BARRIAULT:** Okay. My next question is on slide 14 of your presentation. And this is a good performance story, but having said that, I'd like to get a little more information.

It's the acts and frequencies that you were asking for earlier, and the lowest level was in 2011 and that's a good thing, obviously, and congratulations for accomplishing that. But what I'm wondering, really, is that why is this the lowest level? What has changed; what has happened?

And unless we know what's gone on, what's happened, then we're not going to be able to duplicate it next year. If it's just an accident of nature or of statistics, then we've got a problem.

So can anybody explain to me why this is so much lower than what it's been before?

And not that I want it to be higher. I'm sorry.

**MR. RZENTKOWSKI:** Yeah. But just to respond directly to the question, I would like to say that this is the main reason why we do trending, trending on the performance indicators, so that we have the historical

information. So that we -- if we look at only one number, we know, really what is the performance over the years, and not necessarily at this particular point in time.

To provide more information, I will ask Mr. Ben Poulet, the Director of Compliance Monitoring Division, to respond to your question.

**MR. POULET:** Thank you.

The question relates to one point of -- one data point of performance indicator, and this number has many variables that make it up. The values are reported by the Canadian licensees to us on a quarterly basis. And without actually going back or going case by case as to what has happened for the year or for the quarter, it is difficult to answer the exact question you're asking as to exactly why this number is declining or increasing.

Every time there's a change, there will be a different reason behind it. Some of the changes may be related to heavy works, heavy industrial design works that are causing more and more, if you like, risky conditions in the plant in terms of occupational health and safety, more contractors, more heavy equipment movements versus normal plant operation where the level of staffing and industrial activity is significantly lower.

So I would perhaps give the opportunity to

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**MEMBER BARRIAULT:** But in actuality, the volume of work should not make any difference, should it, because this is a measured per hours of work?

**MR. POULET:** That's correct.

**MEMBER BARRIAULT:** And if that's the case, then why should it make any difference if you've got 5,000 employees as opposed to 1,000 employees?

**MR. POULET:** It is not necessarily the number of employees as it is the type of activities being conducted. That would be the reason why.

**MEMBER BARRIAULT:** Okay. Could I ask Industry to comment as to why this number is lower?

And I know you've got programs in to look after accident prevention and whatnot, but, you know, I was really happy to see this because I think it's a drop. But I'm wondering if you know why. And if you don't know why, how can you duplicate it next year?

But if you do know why, then let's do it.

**MR. TREMBLAY:** Pierre Tremblay, for the record.

You know, this is about walking the talk. The industry and certainly, for all licensees, safety is a key and a top priority. It's a franchise to operate. If we can't demonstrate that we can protect our employees, you know, how can we have the public confidence in other

areas? So there's a large focus and there's a culture of low-level reporting, aggressive follow-up.

We do field observation programs at the beginning of outages, for example, to check ourselves on our behaviours and identify at-risk behaviours. We do extensive trending and assessment in a variety of areas.

So speaking for OPG and the nuclear fleet, our principal focus areas have been around slips and trips and falls and having campaigns in that area along with MSI injuries. We had a spate -- an area where we focused heavily on hands in arm's way, either with the right PP protection or without. And so we focus and tackle campaigns on those areas we feel are at greatest risk.

And so it's that persistent approach, effort, and follow-up when things go wrong to learn and step forward and change that allows us to, I think, achieve improved results.

And that by no means says that they are not things to improve. Clearly, within our operations there are things that we need to get better on and that we're focused hard on making sure that that's not a blip on a curve so an ongoing increase in performance.

So others can speak on their behalf, but that's my view.

**MEMBER BARRIAULT:** Thank you.

Anybody else care to comment?

**MR. HAWTHORNE:** I would just -- actually, I'm just looking at the slide deck. And if you look on page 39, Figure 10, it tells you why it's changed because it shows the dominant change and improvement is at Point Lepreau, and I'm guessing that's because it's shut down. So I'm not sure if you want to read too much into that.

But if you look at the performance trend, you can see there what's happening that, you know, each site has actually improved, Darlington, Pickering. Gentilly-2 is the same. But the major changes, that's step changes in Point Lepreau, and that's in a shutdown state. So that may be something that Point Lepreau have to explain for themselves, but ---

**MEMBER BARRIAULT:** Right. But we have not changed criterias or anything. It's still the same.

**MR. HAWTHORNE:** No, no, but if you're not doing work, if you're not doing the same type of work, then you're not recording things the same way. Then the risk profiles change because of the nature of the plant condition.

**MEMBER BARRIAULT:** Yeah.

**MR. HAWTHORNE:** It's a stable state.

For example, if you look at the Bruce situation here, we've gone three years without having any

-- see, we had nothing in the graph. We had two lost images last year, first time in four years. One of them was related to a slip in a car park.

But Pierre says that we all have that kind of focus on slips and trips because we all have the seasonal risk. It gets higher, as you know, in the winter. So all the operators kind of focus in the areas of risk. The risk profile isn't the same throughout the year.

And I think, as an industry, we're really good at sharing experience amongst each other and learning each other's lessons.

I would bet if you went to every site, they'll all have a winter kind of slips and trips program and all of it largely the same because, unfortunately, here in Canada, we all have winter at roughly the same time.

**MEMBER BARRIAULT:** Thank you.

**MR. PASQUET:** Paul Pasquet, for the record.

I would suggest over the last couple of years, the people at Lepreau have been busy in doing some fairly heavy substantial work, much as the people at Bruce A have been doing. So I would suspect when you look at the types of work that's gone on at Lepreau, it is heavy, industrial type of work to support the refurbishment.

It's really all around saying the right expectations, getting out in the field, monitoring what your staff are doing, making sure they're doing the right things out in the field and then subsequently, as Pierre and both Duncan have talked about, is trending and making sure you're appropriately following up on things that go on.

And so I think there's been a concentrated effort, and so it's not been a fluke. It's been good performance.

**MEMBER BARRIAULT:** Thank you.

**THE CHAIRMAN:** We've got to move on.

**MEMBER BARRIAULT:** Thank you, Mr. Chairman.  
That's fine for now.

**THE CHAIRMAN:** Okay. Thank you. I think we -- I'm just conscious of time here.

I would like to move on to the intervention now and let me start with the first written submission from Jim Ronback as outlined in CMD 12-M40.1.

But before I do that, I'd like, for the record, to remind everybody that, believe it or not, we actually read every submission from beginning to the end. And we have read all the submissions that came to us.

And I would just like to advise that any -- that previous decisions -- we're not going to revisit

previous decisions that the Commission already has written and released, so we're not going to reconsider and re-discuss some issues that have already been dealt with in previous hearings or meetings.

We will also not deal with any policy issue that go beyond this Commission mandate, the safety mandate. But this being said, we take note of the concern expressed by some of the intervenors, and we would like to assure everybody, as we always say, that we will not knowingly license any activity unless we believe it's safe.

And I would like my colleague Commissioners to ask questions that they still feel is within the context of evaluating the 2011 plan as presented here and also on the Fukushima issues that we still have lots of questions, I believe, to ask.

**12-M40.1**

**Written submission from**

**Jim Ronback**

**THE CHAIRMAN:** So with that introductory remark, I'd like to focus now on CMD 12-M40.1 and ask whether Commissioners have any particular questions.

Monsieur Harvey.



**MEMBER HARVEY:** Just mention here that the -- it seems incongruous that this document reporting on the safety performance has no policy statements.

So I don't know what could be a policy statement. Do we have one?

**THE CHAIRMAN:** Well, the policy statement is whether Gentilly-2 will be refurbished, for example. It's not going to be up to us; it's going to be the Government of Quebec that is going to make that decision.

**MEMBER HARVEY:** There's no policy statement on the safety goals of Canada or in future nuclear reactors?

**THE CHAIRMAN:** Well, that's a good question because the Americans do use a numerical value, if you look at the second page. So maybe staff would have a view about whether those kind of policy objectives can be articulated maybe in a numerical way or maybe in a generic way, as this intervenor is recommending?

**MR. RZENTKOWSKI:** That's a very interesting question, in particular, in the context of post-Fukushima activities.

We have only a draft policy on the implementation of probabilistic safety goals in the Canadian regulatory framework.

Currently, safety goals are given in the

regulatory document 337, which defines the design requirements for new power plants and apply directly only to new reactors because of that.

However, the safety goals are considered as targets in the comprehensive safety assessment of reactors preparing for the refurbishment. This is a part of the integrated safety review which the licensees have to conduct in order to define the scope of the refurbishment activities.

This process directs licensees to re-examine their safety goals against those given in the document RD-337, and those safety goals are consistent with the international practice. That means that the core damage frequency should be less frequent than one in 100,000 years, and the large release should be less frequent than one in a million years.

However, for existing reactors, they apply the safety goals being an order of magnitude lower. Simply, often you cannot really reconcile those modern safety goals with the existing plant design, no matter what upgrades will be implemented in the refurbishment process.

So in fact, we apply the safety goals here in Canada

**MEMBRE HARVEY:** Merci.

**THE CHAIRMAN:** I'm not sure I caught -- the intervenor actually mentioned they use -- he quotes a U.S. -- I don't know if it came from their action plan, post-Fukushima action plan, but he talks about that:

"Results from reactor accidents should not exceed 1/10 of 1 percent of the sum fatality risk resulting..."

Is there something that -- is that a good idea to do? Is anybody else doing it? Did we think or talk about doing something like this? What's your view?

**MR. RZENTKOWSKI:** The intervention described the practice which is now being internationally implemented for new power plants.

In terms of the existing power plants, of course it cannot be directly applied as stated in this intervention. And this is the reason why we have to find a practical compromise, internationally accepted practical compromises, to reduce the safety goals by an order of magnitude for operating facilities.

**THE CHAIRMAN:** Anybody? Anything else on this particular -- anybody else wants to comment on it? Okay. Thank you.

Le prochain mémoire est un mémoire de M. François Lachapelle, tel qu'indiqué au numéro des documents CMD 12-M40.2 et 40.2A.

Est-ce qu'il y a des questions? Monsieur Tolgyesi?

**12-M40.2 / 12-M40.2A**

**Mémoire de**

**François A. Lachapelle**

**MEMBRE TOLGYESI:** Monsieur Lachapelle, il mentionne que 1.5 kilomètres de distance, il y a des réservoirs qui contiennent des produits chimiques et industriels.

Est-ce qu'il y a de la réglementation ou des règles ou le code qui détermine une distance sécuritaire en fonction des produits chimiques, pas seulement nécessairement la distance de la centrale vers ces réservoirs, mais entre les différents types de réservoirs, par exemple? Est-ce qu'il y a le volume, nature de produits, et cetera?

**M. RZENTKOWSKI:** M. François Rinfret va répondre à cette question.

**M. RINFRET:** François Rinfret.

Je pourrais pas répondre à votre question directement, je regrette. Je ne sais pas s'il y a une distance entre ces produits.

Je sais, par contre, que les produits sont

connus. Les produits possèdent des fiches signalétiques qui donnent beaucoup, beaucoup d'information sur les méthodes de stockage, les méthodes de transport, les méthodes de manutention et les actions à prendre en cas de -- en cas de fuite ou en cas d'explosion ou d'incendie.

Alors pour en revenir à cette soumission, oui, il y existe une dizaine de réservoirs de la compagnie ServiTank dans le parc de Bécancour, dans le parc industriel. Ils sont à au moins 1.7 kilomètres de la centrale.

Le décret a été donné pour la construction de cette infrastructure en 2002, le Gouvernement du Québec, par le ministère du Développement durable et -- le MDDEP, pardon -- et parcs. Alors, ça a été reçu. Cette infrastructure-là a été -- en tout cas, le décret a été donné et il y a eu consultation publique. Le BAPE a fait son travail en 2001 -- à la fin de 2001 et au début de 2002.

La compagnie avait soumis un rapport sur les risques technologiques liés à ses opérations. Sécurité publique du Québec trouve acceptables les mesures de sécurité proposées et le plan des mesures d'urgence de la compagnie.

De plus, bien, il y a une collaboration dans le parc entre ServiTank et la Municipalité de

Bécancour. Et là on pourrait embarquer dans la description du plan des mesures d'urgence de la Municipalité de Bécancour, mais celle-ci, évidemment, a un lien avec la centrale lorsqu'il y a un problème qui émane d'ailleurs.

Un point sur le risque lui-même, la centrale de Gentilly-2 est bien consciente des effets potentiels des différents résidents du parc, des différentes compagnies qui demeurent là et ils ont un plan d'urgence qui tient compte de ces risques.

D'ailleurs, le pire risque c'est plutôt un risque de contamination de chlore provenant d'une industrie avoisinante. C'est ce qu'on appellerait le scénario limite dans ce cas-là. Et ainsi, la centrale est préparée avec son plan des mesures d'urgence aussi pour faire -- si on veut, réagir à ce genre d'événement, en plus de la municipalité.

J'aimerais aussi en profiter pour vous dire que M. Maurice Richard -- je l'ai vu tout à l'heure; il est dans la salle en arrière; je ne sais pas s'il est encore là -- pourrait, en tant qu'ancien maire de Bécancour, vous parler, si vous le désirez, de ce plan des mesures d'urgence de la ville.

Est-ce que ça répond à votre question?

**MEMBER TOLGYESI:** Oui. Ma question était

vous avez dit que c'est depuis 2002. Est-ce que la Commission était consultée lors de l'émission par le ministère du Développement durable?

**M. RINFRET:** François Rinfret.

Non, la Commission n'a pas été ---

**MEMBER TOLGYESI:** Consultée.

**M. RINFRET:** Oui, consultée -- merci -- pour cette activité-là.

Par contre, après 2002, il y a plusieurs activités, plusieurs éléments de préparation d'urgence qui donc tenaient compte de tous les éléments à risque dans le parc industriel.

**MEMBER TOLGYESI:** Est-ce que vous pouvez commenter? Avez-vous quelque chose à ajouter?

**M. DÉSILETS:** Mario Désilets pour le verbatim.

Premièrement, contrairement à ce que M. Lachapelle dit, les réservoirs ne sont pas à 700 mètres mais à peu près à 1.9 kilomètres de la centrale. C'est des réservoirs qui contiennent des huiles végétales. Et dans le cadre des études qu'on a faites pour le projet de réfection, les études environnementales, le "Fire Hazard Assessment" qui a été fait, ces réservoirs-là ont été tenus en compte et c'est pas ces réservoirs-là qui ont été reconnus comme étant la problématique pour la centrale

mais plutôt l'usine de chlore.

Alors ça a été tenu compte dans toutes nos évaluations, le fait que ces réservoirs-là étaient en place dans le parc.

**MEMBER TOLGYESI:** Je suppose que vous avez les mesures maintenant avec la municipalité, incluant l'usine de chlore, de système de ---

**M. DÉSILETS:** Mario Désilets pour le verbatim.

Effectivement, on travaille en étroite collaboration avec la municipalité pour développer notre plan des mesures d'urgence pour faire face aux événements qui pourraient arriver dans le parc, le ministère de la Sécurité civile aussi.

C'est que "La CCSN a émis un permis en l'absence de la part de l'opérateur, Hydro Québec Productions, de plusieurs rapports attendus." J'imagine qu'il fait référence au rapport intégré -- en fait, on l'avait expliqué je veux pas rentrer dans ça, mais on avait -- je pense que ça avait été ---

**M. RINFRET:** François Rinfret ---

**MEMBRE HARVEY:** --- amplement discuté lors de (inaudible) ---

**M. RINFRET:** Oui, on aurait une réponse rapide pour vous si vous voulez poser la question.



**MEMBRE HARVEY:** Oui, allez-y.

**M. RINFRET:** On est pas certains de ce que cette documentation veut dire. On pense que ça a rapport avec le rapport de sûreté qu'on avait discuté, et bien discuté d'ailleurs, lors du renouvellement de permis. Il est possible que l'intervenant parle de d'autres rapports qui font partie de l'étude intégrée de sûreté. Donc le plan global, le plan de révision global, le plan de mise en œuvre.

Mais ça c'est pas une ré-autorisation qui tient compte de ça, c'est lié à un projet de réfection. Donc il y a pas de vice de forme, cet encadrement-là est tenu par RD-360, le document de réglementation. Hydro Québec est tout-à-fait en ligne avec ses objectifs et dans les bons temps d'ailleurs.

**MEMBRE HARVEY:** Merci.

**LE PRÉSIDENT:** D'autres questions? O.k.  
Merci beaucoup.

The next written submission is from the Sierra Club of Canada, Atlantic Canada chapter as outlined in CMD 12-M40.3.

**12-M40.3**

**Written submission from  
Sierra Club of Canada,**

**Atlantic Canada Chapter**

**THE CHAIRMAN:** Any questions? M. Harvey.

**MEMBER HARVEY:** In the second paragraph, "The statement of CNSC that all Canadian NPP are located far from tectonic plate boundaries and that threat of major earthquake Canadian is scientific falsehood." Well, I just want to come back -- I wanted to come back for that bind just to clarify that because we receive some comments about questioning the fact that how the reactors are far away from the tectonic plate.

And in -- just a moment -- page 4 of the report, it's mentioned that "The task force further verified that all Canadians NPPs are located far from tectonic plate boundaries and that the threat of major earthquake of the Canadian NPPs is negligent." I wanted to ask that question -- what has been done to say that? I mean the task force, what kind of verification and what could be present to once and for all, to, well ---

**THE CHAIRMAN:** And of course, this ---

**MEMBER HARVEY:** --- convince the people that this is the case.

**THE CHAIRMAN:** And it's of course, it's a good opportunity to ask Dr. Adams once again to come in and maybe share with us his learned of wisdom and opinion

and data and science about all of this contested view about seismicity. So who wants to start? You want to start from that statement, was it drawn from that work or was it -- I'll let Dr. Adams start.

**MR. ADAMS:** Thank you. Yes, I don't quite understand what the justification for calling a scientific falsehood is. The quote was taken out of the Fukushima report, the executive summary. And it's very clear it was made in context of the magnitude 9 earthquake in Japan. So if we look at what we consider a major earthquake, in the context that it was written, that was a magnitude 9 earthquake like the earthquake in Japan that caused the Fukushima problems.

The chance of an earthquake like that happening in Canada -- in eastern Canada is extremely low. You need a plate boundary for that to happen. And Canada -- eastern Canada is a long way away from the tectonic plate boundaries. Point Lepreau is over 2,000 kilometres from the mid-Atlantic ridge, which we would not expect to generate earthquakes larger than magnitude 8.

And the Ontario reactors are over 2,000 kilometres from the Puerto Rico trench, which would be the other closest plate boundary. And I guess there is a chance of a magnitude 8-and-a-half or 9 earthquake on that. But that's a long way away.

I want to be just a little facetious here, use some hyperbole and perhaps make a joke. The Canadian reactors in the last decade have actually gone through two magnitude 9 earthquakes and they've survived and continue to operate. Those earthquakes were in Sumatra and Japan. They're obviously a very, very long way away. And it's most critical to remember that it's not just the magnitude of the earthquake, but the distance that is important.

So we talked about the distance away from the plate boundary and the probability that a major earthquake happens. So major in this case being magnitude 9. And we would say the chance is very close to zero if not zero. Thank you.

**THE CHAIRMAN:** Staff, you want to add anything to that? Or maybe to focus your mind, Dr. McDill, do you want add?

**DR. McDILL:** No, I just thought in following up on the presentation this morning where we saw Fermi 2 added on since I wanted to bring that in to the envelope if Dr. Adams would be so kind.

**MR. ADAMS:** So Fermi 2 is actually even closer to the middle of the North American plate and it's further away from plate boundaries than the other reactors.

**MR. RZENTKOWSKI:** I would only like to add

to the response provided by Dr. Adams that there is many geological studies and reports written that provide evidence that our statement was accurate and many of those reports are specifically written for the sites at which power plants are constructed. So maybe it's just the matter of communicating this information properly because we do believe that our statement are based on good scientific evidence.

**THE CHAIRMAN:** So, by now you know that I always ask that question, so that's science, but since we've learned from Fukushima not to entirely rely on existing scientific evidence, I ask the question of a doomsday scenario in Canada. So what's going to happen in a doomsday scenario to the reactor? Somebody give me the bottom line.

**MR. RZENTKOSWKI:** Now I have to be very careful how I answer this question because my words were already taken out of context on many occasions. First of all, we have to define what is a doomsday scenario. Is this really a catastrophic event of the magnitude of that, what happened in Fukushima, or we are taking this beyond - - further beyond.

So let's assume that we will deal with an earthquake of the magnitude of that what happened in Fukushima. That's correct? Can I use this as an initial

assumption?

**THE CHAIRMAN:** Sounds good.

**MR. RZENTKOWSKI:** Okay. So in this particular case, we can -- the worst consequences we can expect would be unfiltered but controlled release from the containment after maybe four or five days -- four or five days after this catastrophic event.

**THE CHAIRMAN:** If you were not able to do anything during those four or five days?

**MR. RZENTKOWSKI:** That's correct.

**THE CHAIRMAN:** If I understand, the plan is that during these four or five days, presumably, the industry is now -- and maybe that's something to the industry I was going to ask OPG, in your video, which by the way I hope you -- you said you're going to release it now to the public, it may be a very interesting thing for the public to see.

But what I didn't see is I thought the industry's now relying on off-site assets that can be brought to the site to make sure that nobody -- there's no disaster going to be unmitigated for more than 24, 48 hours, whatever the time that is required.

**MR. ELLIOTT:** Mark Elliott, for the record, from OPG. First of all, yes, we are going to release the video to the public and the equipment that we bought and

that you saw in the video has to be close to the site to be able to be deployed in time to arrest the accident.

So that equipment will stay on site, it's going to stay in high areas on site, not down near the lake, high areas in light structures that, if there was an earthquake you could remove the kind of weather enclosures, you could remove the enclosure and deploy it.

So we need to have that equipment close to the site to meet its mission.

What we'll have offsite, in a central location, is back-up equipment because any equipment over four or five days -- as Greg talked about -- could have to be replaced and that's where we're going to have our spares or other supplies so they could be brought on to augment.

**THE CHAIRMAN:** Mr. Jammal?

**MR. JAMMAL:** Ramzi JamMal, for the record.

I'm compelled to add to Dr. Rzentkoswki's answer here just to clarify two things.

Dr. Adams spoke about tectonic plates. Dr. Rzentkoswki mentioned to you the -- what happens in a doomsday scenario in a conceptual event.

Regardless of where is the epicentre, regardless of what is action or what PGA, the reactors will shut down safely. And the importance here to

highlight is: all of the measures taking place right now, enhancement that is taking -- that we put in place, the industry has complied with and putting in place the programs of the action items in order to ensure that the doomsday scenario will not happen. Because you have to have a lot of mitigation measures who will stop the progression of incident not to be available.

And post-Fukushima, we have the availability of equipment to maintain the three Cs: contained cooling and the containment of the reactor and, if needed, there is the capacity to provide added equipment from other sites in order to support the safe shutdown of the reactor.

So regardless of the event, regardless of the distance, regardless of the PGA, the reactors would shut down safely and we have measures in place from a regulatory perspective, implementation perspective and response to keep the reactor in a safe shutdown state.

**THE CHAIRMAN:** Okay, thank you.

Monsieur Harvey, c'est fini?

Un autre? Any other? Mr. Tolgyesi?

**MEMBER TOLGYESI:** This is to Dr. Adams.

Dr. Adams, there is some comments on faults which are running across or nearby the facility at Lepreau but the faults are structures, geological structures,



which are everywhere, not only close or far from the facility.

What's the -- and here is surprising: fragments in the recent years, they are magnitude 4, 2 to 4. What's the probability that this frequency will change? Or this magnitude will change?

**DR. ADAMS:** Dr. John Adams, Natural Resources Canada, for the record.

We have to remember that the earthquake history we have in Canada, about 200 years, is a very small sample of what could happen. So if we've seen a magnitude 4.5 earthquake in that time period, it's possible that a larger earthquake could happen and, in fact, we -- our models that account for low-probability seismic hazard take that into account.

We know, on average, that for every 10 magnitude 4 earthquakes, we'll get one magnitude 5. There's that factor of 10 between the rates of the earthquakes and, because of that, we can make some expectations of the probability of magnitude 6 or larger earthquakes which are the ones which are of greatest concern for the nuclear reactors.

You also raised the question about faults. We can go out in Canada, almost anywhere, and map geological faults. With almost -- without exception, we

have not found a fault that has moved during an earthquake in historic times other than the one in 1989 in Ungava.

And so although we see these very large faults -- and if you fly from Ottawa to Toronto, you probably could cross about 200 of them at least -- we can't say any one of those faults is active and, because of that, when we model the occurrences of earthquakes, right now, we're assuming that they're happening in a certain area but fairly randomly and not associated with particular faults.

There is no doubt that if we have a large earthquake in Eastern Canada, in the next 5 or 10 or 50 years, it will probably occur -- it will occur on a fault and we will suddenly say there's an unknown fault. But there are lots of candidate faults out there and there's nothing to tell us at the moment that one fault is more dangerous than another.

Thank you.

**THE CHAIRMAN:** Okay. Thank you.

But before, I'm going to take the opportunity here, there was one issue about emergency management and I would like to hear from the Durham Emergency Management office, from Ivan Ciuciura.

I heard from Staff that there could be a possibility of a problem with a secondary topic and that's

sirens.

Can somebody tell me what is -- I thought to be really fixed ---

**MR. CIUCIURA:** This is Ivan Ciuciura, can you hear me okay?

**THE CHAIRMAN:** Can somebody tell me what is the problem with the siren?

Mr. Ciuciura, why don't we start with you?

**MR. CIUCIURA:** It's Ivan Ciuciura, can you hear me okay?

**THE CHAIRMAN:** Oh yes, we can.

**MR. CIUCIURA:** Okay, Ivan Ciuciura. I'm the Director of Emergency Management from Durham Region.

When last we were at your last meeting in -- I think it was March, I'd indicated that I expected to have a design on the number and locations of -- of additional sirens for Pickering in April, the final report from the company we had hired.

We still have not received that report as the company had detected a discrepancy in the output of the sirens in Pickering.

So what we've got into is a technological issue or challenge that has to be surmounted before we can go forward.

The Pickering sirens have been measured to

be putting out 110 decibels. The same sirens in the States, in real-life conditions, are anywhere between 114 and 122.

In Clarington, they measured one of the sirens there. It puts out 116 which would be in the range. So 116 decibels. The sirens in Pickering, the nine sirens, are putting out 110 which is low.

They've done -- we've taken equipment out of storage, they've done bench testing of a horn and they've been trying to find, as I say, the discrepancy.

They've done one round of field testing and the company is out there today doing what we hope to be the final testing by exchanging some chips on each of the selected siren sites.

So we are slipping in our target of October. It depends on the result of the testing today on where we are. We are at risk, as I think your staff pointed out, of meeting that October date for a full installation.

**THE CHAIRMAN:** So if the chip problem be resolved, do you think that this -- the compliance will be met?

**MR. CIUCIURA:** If the testing today, this morning, comes back and we can resolve this problem and get the output where it should be, the company is prepared

within short order to give us the -- you know, the preliminary findings. We won't wait till the full report but they can turn around and give us the number and locations within very short order.

And then, we've got lined up -- you know, we'd have to do, you know, contracts and things like that to get -- to be put in place. So that's where we're at.

Now, the issue of decibels, I've asked them to explain to the folks here, you know, why it's taking so long and what the issue is.

If you -- and this is from the company that's doing it -- if you put in more sirens at approximately 110 decibels, you would need for that area in Pickering a total of about 35 sirens. So that would be 26 extra sirens that would have to be put in.

If you can get where the sirens should be, the output around 116 decibels, that's probably around 20 total so maybe 11 extra sirens. So it's significant.

So it's a problem that I think that we -- a challenge that needs to be sorted out before we can go forward.

**THE CHAIRMAN:** Okay. I guess we'll wait for your report in October. Thank you.

Anybody has a particular question on that one?

So why don't we move on.

**12-M40.4**

**Mémoire de**

**Monique Meunier**

**LE PRÉSIDENT:** Le prochain mémoire est de madame Monique Meunier sous le numéro de document M40.4.

Est-ce qu'il y a des commentaires?

Monsieur Tolgyesi?

**MEMBRE TOLGYESI:** Selon l'intervenante, elle constate que le principe de précaution est inexistant dans ce rapport annuel.

Est-ce que vous pouvez commenter, le Staff?

**M. RINFRET:** François Rinfret, pour le personnel.

C'est une accusation qui est très large. Je ne sais pas exactement où je devrais commencer pour essayer de répondre à cette question, sauf qu'on doit quand même développer une certaine empathie face à cette intervention. J'ai l'impression qu'il y a un message qui ne passe pas. Il y a une communication qui ne s'est pas faite avec cette personne.

Le manque de précaution, le trop peu de leçons tirées de Fukushima, je pense qu'on a, depuis deux

ou trois réunions, une idée que les conséquences de Fukushima sont importantes et beaucoup de leçons ont été tirées de cet événement-là aussi.

D'ailleurs, la communauté canadienne s'en allait dans cette direction-là avant même que l'événement de Fukushima arrive. C'est ce qui a fait que plusieurs améliorations ont été apportées à Point Lepreau qui sont exactement en ligne avec ce genre d'événement-là.

Donc précaution là, le mot est fort.

On parle après ça de séismicité qui est négligée à ce point. Bien, je pense que depuis qu'on est allé voir le public lors des audiences de renouvellement à Bécancour l'an dernier et avec la publication des différents rapports, il y a, je crois, assez d'éléments pour démontrer que la séismicité est prise très au sérieux.

L'énoncé qui dit que les normes du code du bâtiment sont plus strictes que pour la construction d'une centrale nucléaire, je pense qu'il y a matière à indiquer que ça c'est pas vrai. Les normes canadiennes, la NCOR N-289.1 sont beaucoup plus strictes que le Code national du bâtiment.

Alors d'avoir ressenti le fort tremblement de terre en 2010, bien, je crois que Gentilly-2 -- puis ils pourront vous le confirmer -- qu'il n'y a pas eu de

conséquences à Gentilly. D'ailleurs, il n'y en n'a pas eu lors du tremblement de terre précédent qui était plus important.

Alors il faut mettre en perspective ce qui est dit là. J'ai l'impression que c'est un problème de communication de faits scientifiques sur lesquels la communauté s'appuie.

En '79, à Three-Mile Island, oui, il y a eu des leçons tirées, plusieurs leçons tirées de Three-Mile Island. On en tire encore. Three-Mile Island n'a pas non plus rejeté significativement de produits de fission dans l'atmosphère. Ça a été plutôt une peur, malgré l'importance de l'événement.

La formation, toute la formation systématique -- l'approche systématique à la formation, c'est un produit de Three-Mile Island.

Alors ces éléments-là font que, ensemble, on pourrait apprendre à démontrer à cette intervenante que le risque est -- ça pourrait aider à faire descendre le niveau d'indignation de cette personne.

Pour ce qui est des événements plus spécifiques pour Gentilly lorsqu'on parle de séismicité, bien, il y a -- dans la norme N-289.1, il y a une explication ou un besoin par le titulaire d'apporter des améliorations à ses analyses.



La principale c'est l'analyse qui demande une analyse des démarches sismiques, qui va au-delà de ce qui a été conçu, qui essaye de voir jusqu'où tiendrait la centrale lorsque ce genre d'événement-là. Ça a permis de comprendre mieux le comportement et d'améliorer les infrastructures aux centrales. C'est fait à Gentilly. C'est fait à Point Lepreau et le reste -- pour les autres centrales aussi.

Alors ces éléments-là font qu'on y va un peu fort là-dedans dans cette intervention-là. Le principe de précaution, on l'utilise. On évalue les titulaires. Malgré qu'un titulaire a obtenu une cote de satisfaisant, on demande quand même un programme d'amélioration toujours. On demande quand même une défense en profondeur.

Si la défense en profondeur c'est une série de pelures autour d'un oignon, ben, c'est pas parce qu'une pelure d'oignon est pourrie qu'on y travaille pas. Tous les éléments, toutes les barrières au manque de sûreté sont tenus en compte et le titulaire ne peut pas s'asseoir en disant, "Je suis dans un niveau satisfaisant."

Alors j'ai essayé de donner cette espèce de réponse globale à l'intervention avec des faits. C'est à peu près tout.

**LE PRÉSIDENT:** D'autres questions?

**MEMBRE TOLGYESI:** Je pense que la question c'est une question de communication que peut-être Hydro-Québec et la municipalité doivent faire, parce qu'on quand on parle, par exemple, le code de bâtiment, il est clair que les codes sont différents, mais est-ce que c'est quelque chose qui est diffusé auprès de la population? C'est ça peut-être la question. C'est de là que vient cette incompréhension, volontaire peut-être ou involontaire.

**M. DÉSILETS:** Mario Désilets pour le verbatim.

On met à la disposition du public de la région -- on a un site web où toute notre information sur la centrale est publiée. Les plans d'urgence, le ministère de la Sécurité civile ont aussi un site sur lequel sont publiés les différents plans pour contrer à une urgence. Ça fait que je ne sais pas si -- je ne sais pas si Mme Meunier a pris la peine d'aller voir les sites et l'information qui existe dessus, mais je peux la rassurer quant aux aspects de Fukushima -- on en a parlé beaucoup aujourd'hui -- le plan qui est en place, on le suit et on y adhère.

En 1979, quand est arrivé Three-Mile Island, la centrale nucléaire était en construction. Je peux dire qu'il y a eu des modifications que les ACEL nous

a fait faire du côté du système de refroidissement d'urgence du cœur haute pression, qui n'existait pas, qu'on a rajouté suite à l'événement de Three-Mile Island.

Et du côté de la séismicité, je pense qu'on en a parlé aussi tantôt. C'est quand même -- la centrale -- toutes les études dans le cadre du projet ont été faites pour confirmer que, du point de vue sismique, la centrale était en mesure de résister.

**LE PRÉSIDENT:** O.k. Merci. Il faut avancer.

The next written submission is from the Power Workers Union, as outlined in CMD 12-M40.5.

**12-M40.5**

**Written submission by**

**The Power Workers Union**

**THE CHAIRMAN:** Any questions?

Dr. Barriault?

**MEMBER BARRIAULT:** Thank you, Mr. Chairman.

I guess the question I would like to address is to Mr. Doehler, is it, who is on teleconference -- is he still there -- from the Ontario Ministry of Labour?

**THE CHAIRMAN:** Mr. Doehler, are you still

on?

**MEMBER BARRIAULT:** I think we lost him.

**THE CHAIRMAN:** I guess not.

**MEMBER BARRIAULT:** Then I would like to ---

**MR. DOEHLER:** I'm still on.

**MEMBER BARRIAULT:** Okay. One of the issues raised here is that they have -- an asbestos problem exists with OPG that is not resolved, and I guess what I'm wondering is how extensive is it and if you're aware of it?

**MR. DOEHLER:** Yes, I'm aware of it, but I'm not the regional manager for that plant. So I understand that there is an ongoing investigation and there will be further orders issued.

**THE CHAIRMAN:** Okay. Let OPG clue us in on this one.

**MEMBER BARRIAULT:** Yes.

**MR. TREMBLAY:** Thank you.

Pierre Tremblay, for the record.

So just to settle the context, in terms of the facilities, asbestos hazard is a particular issue associated with Pickering A. Certainly at the time of the construction in the '60s and '70s, asbestos was still in common use, much less so at any of the other later facilities. And as we know, it's an airborne hazard.

The plant, over the years -- and I've been involved with Pickering a long time -- I've had a number of asbestos removal initiatives where we've taken great chunks of the insulation off and replaced it and so forth.

In this case, what I would say is that while there is a program, it certainly meets the requirements. We have hazard identification clearly if we're dealing with a substance that's unknown. We assume it's asbestos and we take precautions and so forth.

The way I would characterize the issue here is that, you know, the management team, by and large, have had a compliance mentality and, you know, did what was required, and I think, you know, the recalibration I've done is around the sense of urgency around dealing with identified deficiencies.

And so the team at the plant has done some benchmarking beyond the nuclear industry to see what -- who are the best people at handling this, what do they do, and we found that our program, while compliant, is short of that mark. And so I've encouraged the site and I'm -- you know, as the intervention here states, they're looking forward to this issue being solved promptly. I've laid that expectation with the site as well, and I'm certain it will get on top of it.

The issue was really around -- we've in

fact done a number of things. We've engaged an external agency who are experts in this area who are part of the current spate of legislation to give us counsel and make changes to the program.

We've put in place a dedicated field coordinator for asbestos mitigation and dealing with that.

We've posted additional signage to deal with issues that were raised and we've going beyond that. The issue was really around fine to say there's asbestos don't enter but in terms of reality, people may have to go in there to do some things and so there's a requirement established what the protective requirements are.

So, I would say, you know, shame on us in terms of having that mentality. We've all been recalibrated. Having said that, you know, there are no exposures of substance to our staff but I think there was a little bit of eroded trust in terms of this becoming an argument. It was unnecessary. The management team's been recalibrated and we're going to move forward and fix this in the long run.

The one order that was issued was essentially -- and this can be confirmed -- over the need to document field inspections to confirm secured -- any potential areas that are asbestos and so forth. And so, that has been done. The order was to complete it by the

end of June. That was completed. It was always being done, it just wasn't documented adequately and that's been corrected as well.

Asbestos will be a hazard for the site for the duration. It's very difficult given where it is to completely eradicate it. We've made many attempts and reduced the risk but we need to be good, excellent at dealing with this and my commitment to the Commission here is that we are doing that and we'll get this in the box very quickly.

**MEMBER BARRIAULT:** Thank you. CNSC, are you tracking this in terms of occupational health?

**MR. RZENTKOWSKI:** Yes, this problem has been also recognized by our site inspectors and we raised an action on licensees to rectify the problem. I would gladly ask Mr. Miguel Santini to describe specifics of this action item.

**MR. SANTINI:** This is Miguel Santini for the record. Mr. Tremblay said there was an older issue in relation to documentation done by -- to document the walk-downs required by the province on the recognition of the asbestos hazards.

However, in the month of June or early July, there was a second inspection by MOL and we worked along with them and we are expecting the report to be

produced sometime in September. We don't know yet what the conclusions of that follow-up inspection will be.

In the meantime, we are -- we recognize that OPG senior management has taken the lead in trying to resolve this issue as quickly as possible. They have established, for instance, a weekly plan work-downs by the asbestos program administrator and they have improved the signage and indication of the risk of presence of asbestos, etcetera.

So, there are several initiatives that are very positive and we look forward to see what the conclusion of the MOA is at the end of September.

**MEMBER BARRIAULT:** Thank you. Thank you Mr. Chairman.

**THE CHAIRMAN:** Thank you. Let's move on. Le prochain mémoire est du groupe les artistes pour la paix sous le numéro de document M40.6. Est-ce qu'il y a des questions? Dr. McDill?

**12-M40.6**

**Mémoire de**

***Les Artistes pour la Paix***

**MEMBER McDILL:** CCSM, dis-moi, s'il-vous-plaît, en ce qui concerne les méta-analyses...



**THE CHAIRMAN:** Qui a qui?. C'est les fameuses analyses de KK...

**MEMBER McDILL:** Yeah, kindekreps.

**THE CHAIRMAN:** Oui, c'est ça.

**MEMBER McDILL:** Une autre chose. One more time.

**MR. RINFRET:** Nous avons -- en français?

**MEMBER McDILL:** Oui.

**MR. RINFRET:** Pour Gentilly. Nous avons discuté de ces fameuses analyses lors de l'audience ---

**THE CHAIRMAN:** Plusieurs fois!

**MR. RINFRET:** Oui. En 2011 lors du renouvellement de permis, entre autre de Gentilly, à Bécancour.

Si vous voulez encore, on pourrait toujours demander à madame Thompson ou ses collègues de venir en parler? Je sais pas si elle est dans la salle.

**THE CHAIRMAN:** Seulement une petite réponse. Le bottom-line.

**MR. RINFRET:** Ce n'est pas à moi à faire la conclusion de ces méta-analyses, mais je sais que madame Thompson et ses collègues avaient déjà amplement discuté --

**THE CHAIRMAN:** Madame Lane?

**MS. LANE:** Rachel Lane, for the record.

I'm the CNSC's epidemiologist. The kick study is a study that looked at childhood leukemia and distance from German nuclear power plants that found an increased risk of developing childhood cancer the closer children were to a nuclear power plant.

However, the review of that study found that there was no evidence that rates of childhood cancer or related to the radiation exposures from those plants. Since that time, when the German study was conducted, there have been three other studies conducted in Britain, France and in Switzerland that have also looked at distance from a nuclear power plant and they did not have the same findings that the Germans study had.

Likewise, since that time, there has been significant authoritative reviews done that have looked at the most recent studies and the bottom-line is that there is no evidence that the environmental exposures from nuclear power plants are related to clusters of childhood cancer around nuclear power plants.

Most importantly is when we look at Canadian nuclear power plants, there is no evidence of clusters of childhood cancers, thank you.

**THE CHAIRMAN:** Thank you. Merci beaucoup.

The next written submission is from the Bruce Peninsula environment group is outlined in CMD M40.7

and there's quite a few issue raised here. Who wants to go first? Dr. McDill.

**12-M40.7**

**Written submission from the  
Bruce Peninsula  
Environment Group**

**MEMBER McDILL:** I think two interveners raised the question with respect to the unfortunate death at Darlington and both -- I think two interveners said when -- why have the police conducted a coroner's function and perhaps it needs to be addressed in public. On the record.

**MR. TREMBLAY:** Pierre Tremblay for the record. This was a matter of ENR that came before the Commission, I believe, earlier this year. Obviously an unfortunate event. Not work related and, you know, I'm not sure what comment to make over that remark. I mean, clearly the death was investigated. All the regulations were followed and so forth and they concluded that it was not a work related issue so I can't really comment on jurisdiction and who does what but I can tell you that right things were done in this case. It's just an

unfortunate event for us to -- and for the staff -- to have to deal with.

**THE CHAIRMAN:** Thank you. Anything else? Mr. Tolgyesi.

**MEMBER TOLGYESI:** Yes. On page 3, just to say that we keep Bruce on the hook also, that there is a periodic shortage in minimal shift complement operator's attendance. Could you comment on that?

**MR. HAWTHORNE:** So, for the record, Duncan Hawthorne. When he talks about minimal shift complement, I think if you look in the body of CNSC report, you'll find that this is not in relation to license operational staff but more in relation to emergency response organization. Typically, these are short term during shift transfer transinge (phonetic). You know -- you're for three hours or some period of time, not all of the emergency response people have arrived on site. Some of us were related (phonetic) by and large, none of these comments and in relation to control room staff of control room operational staff.

Over the past number of years, you'll see on the table here, that we've added more and more licenses to the site and in previous years, we would have had situations where minimum complaint violations related to control room staff but that's not the case in these

events. I've mentioned here, they're short term transient generally related to shift change over period.

**MEMBER TOLGYESI:** The last one is hydrazine spills and there was even a legal action taken by Environment

**MR. HAWTHORNE:** For the record, Duncan Hawthorne.

Yes, we have mentioned here in front of the Commission before that there was an inspection done by Ministry of Environment people. There were six charges that are actually currently still under discussion with us.

Bruce Power will be defending all of those charges. It's been an ongoing discussion for about the last 14 months or so. Commission staff are well aware of that situation. But it's our view that these charges will be successfully defended are they ever to get to a Court situation.

**MEMBER TOLGYESI:** The staff has something to add.

**MR. RZENTKOWSKI:** As this refers to the case, that is still before the Courts, I think CNSC staff has to be very careful in expressing any comments.

Nevertheless, I would like to point out that Bruce Power has taken corrective actions to minimize

the reoccurrence of such an event and CNSC staff is satisfied with the action taken by the licensees to date.

**THE CHAIRMAN:** Any other comments?

Just one. You know, do you have any idea what caused this -- the last -- on page 3, the one before last sentence, what's this remark about lot of fires that can start in the waste management -- I have no -- I'm trying to figure out what's the fire issue.

Anybody can help me on this one? What is he aiming at here? What's the intervener thinking here?

**MR. LOJK:** Bob Lojk, for the record.

There were about three very small fires reported in the S99. One of them was -- I believe was a small heater that some dust that caught fire and a couple similar items. They were immediately responded to and taken care of by the emergency response unit of Bruce Power.

So given a large plant, such small malfunctions are not unexpected, but none of them were in a location or in a position that would cause the sort of scenario that's been alluded to by the interveners. So it is -- these are like equivalent to plugging in a kettle the wrong way at home and having the outlet burn level and not a fire that could lead to anything else.

**THE CHAIRMAN:** Maybe, or else little

incidents.

**MR. LOJK:** Sorry, if I might just add, the -- our reporting requirements require them to report such fires even though they're insignificant so it shows up in our report, S99. Thank you.

**THE CHAIRMAN:** Okay. Anything else?

The next submission is from CCNB Action, Saint John Fundy Chapter as outlined in CMD 40.8 and 40.8A. So there's two submissions here.

**12M40.8 / 12-M40.8A**

**Written submission**

**from CCNB Action,**

**Saint John Fundy Chapter**

**THE CHAIRMAN:** Questions? Dr. McDill.

**MEMBER McDILL:** So more general, but with this intervention in mind, as we move to the licence control handbook, there's, I think, just Pickering left to come on with the licence control handbook -- Darlington, sorry. Thank you.

I think maybe the public interveners might question the mechanics of making a change to the LCH so perhaps we could have a -- since I guess Bruce had one LCH change "aussi pour Gentilly-2". Pickering had a number 5.

And then there's the question of whether Point Lepreau had one or zero.

Perhaps staff could explain the administrative steps in making a change to the LCH. Who proposes it, why, who signs it off, why, who monitors the paperwork or electronic control of the documentation?

**MR. RZENTKOWSKI:** I understand the question. But before I answer the question, I would like to clarify certain misconception underlying the concern raised in this intervention.

The licence condition handbook does not introduce any new requirements. The licence condition handbook documents only compliance verification criteria or requirements standing from the licensing basis of a facility and the licensing basis consists of the Act, Regulations, operating licence, the licence application provided by the applicant and supporting regulatory documents. In addition, the licence condition handbook introduces also regulatory expectations going beyond regulatory requirements, or compliance verification criteria, as stated in the licence condition handbook.

Because of that, the licence condition handbook, as presented in support of a regulatory recommendation for the decision to the Commission, can be only a draft document because the licence condition



handbook can be only finalized once the operating licence is approved or issued by the Commission.

So that means, in this particular case, the licence condition handbook has been finalized two months after the day two hearing. The process for the revision of the licence condition handbook is very well described in our internal procedures, and authority was delegated to the Director-General of Directorate of Power Reactor Regulation to make any changes to the licence condition, as long as those changes don't affect the safety case as approved by the Commission. Once the safety case will be affected by the change proposed, this has to go to the Commission for final approval.

We have the forms that provide very clear justification if the proposed change is safe; that means it introduces a safe change in the overall safety case of the facility or, otherwise, if this change should be presented to the Commission.

And with this justification behind, personally, I assess the merits of a given change and give the final approval.

**MEMBER McDILL:** So part of the issue here in this particular case was the draft document, versus the licence.

**MR. RZENTKOWSKI:** Yes, the assumption here

was that our draft document as presented in support of the recommendation, was considered final but, in fact, it was a draft document. As I mentioned before, we can only finalize this document when the final licence is issued by the Commission.

**MEMBER McDILL:** Thank, Mr. Chair.

**THE CHAIRMAN:** Ms. Velshi.

**MEMBER VELSHI:** In the third paragraph, the intervener mentions that for the fire protection -- the emergency management and fire protection safety and control area, the satisfactory rating was not until May 2012. And why does the 2011 reflect that? Can you comment on that, please?

**MR. RINFRET:** François Rinfret for the Point Lepreau Regulatory Program Division.

Yes, very clear case. In this case, at the end of the year, the objective was to -- through the document to communicate the quality of the program -- quality status of the program.

Point Lepreau at this stage had reached 90 percent of its obligation or of its expectations written in a protocol that had been agreed between the CNSC and New Brunswick Power Nuclear.

So at 90 percent of the activities that were scheduled for that 2011 with good results, we thought

it was better at that time to indicate to the Commission that it was satisfactory. However, the protocol itself was not signed after 100 percent of the elements of the protocol were completed, and that is in the spring of 2012. And this is how, actually, NB Power Nuclear got to its whole point removed because the protocol had been effectively filled.

**THE CHAIRMAN:** M. Harvey.

**MEMBER HARVEY:** The second paragraph, President Binder, I'm referring:

"We are submitting our Fukushima lessons learned assumption because President Binder said at the May 3<sup>rd</sup> public meeting that he wasn't going to go through our submission line by line and that there would be ample time during the annual update to address the issues flagged in our submission."

My question is just, do you think all the points that have been under submission in May have been answered one way or in another with today's report?

**MR. RZENTKOWSKI:** I'm not sure if I catch the question. Could you rephrase it, please?

**MEMBER HARVEY:** Yes. The second paragraph of the letter there; you got it?

( SHORT PAUSE )

**THE CHAIRMAN:** This is the first 40.8;  
right? 40.8, this is from Sharon Murphy?

The second ---

**MEMBER HARVEY:** The second paragraph, yeah.

**THE CHAIRMAN:** Second paragraph.

**MEMBER HARVEY:** There was a lot of things  
that was mentioned in their report in May and they say --  
the following that they say that President Binder said  
that they would allot time in the end. We'll report to --  
to answer those points; what was the issues.

**MR. RZENTKOWSKI:** I certainly believe that  
many of the information provided in our supplemental CMD  
responds to the concern raised in the submission.

But, nevertheless, line-by-line assessment  
hasn't been done.

**THE CHAIRMAN:** Okay, the way I interpret  
this is that there was some question during the licence  
renewal, all right, that got into the details and ---

**MEMBER HARVEY:** In May.

**THE CHAIRMAN:** This was in May and, as I've  
stated in our Opening Remarks, we're not going re-visit  
the Commission decision.

The Commission decision stands on its own  
and, if you don't find the answer there, then we ---

( SHORT PAUSE/COURTE PAUSE )

**THE CHAIRMAN:** So it's during the May 3<sup>rd</sup>.

So if we are now focussing strictly on Fukushima alone, then my question here -- just following up here -- is: there was 17 questions posed by these intervenors, what's the plan for responding to those 17 questions?

Some of them, I -- you know, if you look at them, some of them I thought already had been replied to but I -- again, I'm not going to go line-by-line here.

What does Staff plan to reply to these questions?

**MR. RZENTKOWSKI:** I read this intervention with a great interest because I find that it took a lot of work to put this intervention together and some of the questions are really reflecting probably the concern of the public.

So from that standpoint, I would definitely like to respond publicly to those questions, one by one, and if the answer was already provided to some of them, I will make a direct reference.

So I would note this as an action on DPRR to provide a written response which will be also published on our external website.

**THE CHAIRMAN:** But for today, the reference

to some of the action plans of Fukushima -- I think these are questions 4 and 5 -- they object to if a -- if you look at question 3.4, 3.5, can you respond to why they are deemed to be closed while the seismic study is not still finished.

I think that's what the story is.

**MR. RZENTKOWSKI:** Actually, after the May 3<sup>rd</sup> meeting, we had a discussion and we revised our approach. We decided not to close an action item based on the information provided but based on the approval of the final safety case.

Because of that, this action item, which is of concern, is open.

**THE CHAIRMAN:** So the question has been responded to?

**MR. RZENTKOWSKI:** Yes.

**THE CHAIRMAN:** Okay.

**MR. RZENTKOWSKI:** And we responded in favour of this intervention.

**THE CHAIRMAN:** Okay, thank you.

Monsieur Harvey?

So you will go through them and then also verify whether there's any open question here from the 17?

**MR. RZENTKOWSKI:** Yes.

Actually, the status provided in a

supplemental CMD reflects our current thinking and I think responds also to the concern raised in this intervention.

**THE CHAIRMAN:** Okay, thank you.

Anybody else? Any other question?

By the way, on just -- just remind me -- I can't rely on my memory any more but question 3.12, the "External Advisory Committee Report", that was made public; was it not?

**MR. RZENTKOWSKI:** Yes, if I recall correctly, it has been published on our external website. Actually, on April 24<sup>th</sup>, 2012. Here it is.

**THE CHAIRMAN:** Okay. Thank you.

( SHORT PAUSE/COURTE PAUSE )

**12-M40.9**

**Mémoire de**

**Philippe Giroul**

**LE PRÉSIDENT:** O.k., le prochain mémoire est de monsieur Philippe Giroul sur le numéro de document M40.9.

Est-ce qu'il y a des questions?

( SHORT PAUSE/COURTE PAUSE )

**MEMBRE HARVEY:** Juste à la fin, il y a encore un commentaire mais c'est encore sur le rapport de

sûreté intégrée et on l'a touché tantôt.

**LE PRÉSIDENT:** Des questions? Pas de questions?

Alors, moi, j'ai une question: À la deuxième page:

« Quel était l'état des générateurs de vapeur G-2? »

Gentilly-2. Pourquoi c'était ma question? Est-ce qu'il y a des problèmes avec cette vapeur de Gentilly-2?

**M. RINFRET:** Les générateurs de -- pardon, François Rinfret.

Les générateurs de vapeur de Gentilly-2 sont en bon état. Ils respectent présentement tous les critères de service dans l'environnement canadien et Hydro-Québec a choisi de ne pas les remplacer. C'est une décision économique. C'est une décision qui tient compte de l'état des générateurs jusqu'à date.

Et l'environnement permet d'avoir un programme d'inspection périodique qui ne fait pas de grands éclats pour 35 ans mais qui dit: on va valider -- valider auprès du -- de l'agence de réglementation la qualité avec un programme régulier au cours des années.

Donc, c'est une décision économique du titulaire et la Commission est en accord avec ça.



**LE PRÉSIDENT:** Alors, encore une fois, on a beaucoup de questions, qu'est-ce qu'on va faire avec toutes les questions?

Est-ce que Staff a l'intention de répondre?

**M. RINFRET:** On a toutes les réponses à ces questions.

**LE PRÉSIDENT:** Publiquement?

**M. RINFRET:** Si vous voulez.

**LE PRÉSIDENT:** S'il vous plaît.

Non, non, pas aujourd'hui.

**M. RINFRET:** On va répondre par lettre.

**LE PRÉSIDENT:** Oui, c'est ça.

**M. RINFRET:** D'accord.

**LE PRÉSIDENT:** Oui, oui, oui.

**M. RINFRET:** On a toute la journée.

(SHORT PAUSE/COURTE PAUSE)

12-M-40.10

Written submission

from Mary Lou Harley

**THE CHAIRMAN:** The next written submission is from Dr. Mary Lou Harley as outlined in CMD 40.10.

Des questions? Ms. Velshi?

**MS. VELSHI:** My question is for Staff and

it's a more generic question.

The action plan that Staff presented to us in May, there's still new lessons being learned from the Fukushima incident as more panels and investigations complete their work.

So what's the process for keeping that action plan dynamic and alive?

**MR. RZENTKOWSKI:** We continue to assess international reports providing lessons learned from Fukushima accident and we also assess if there are any gaps related to these lessons learned in our action plan.

Once these gaps will be identified, we will revise the action plan and this has been stated very clearly in the management response we issued earlier this year.

So this action plan has to be seen as an evergreen document.

**MEMBER VELSHI:** And so the one the intervenor has talked about here, specifically, a lot has to do with this "Made in Japan" incident and so the action plan that we will see, I guess, an update on in October perhaps will show a reflection of any learnings for the CNSC in Canada based on that?

**MR. RZENTKOWSKI:** Assuming that this particular lessons learned will point out to a gap in our

action plan.

**THE CHAIRMAN:** Maybe a quick -- I don't want a long long reply but there is insinuation here that our regulatory process and the Japanese Fukushima -- pre-Fukushima processes are similar. In other words, there is no -- the kind of man-made or man-caused problems was the cause of this disaster.

How would you compare the Japanese regulatory process with ours?

**MR. RZENTKOWSKI:** I will try to provide a short response.

The regulatory philosophy in Japan has been -- the protection of the original design basis of the licenced facilities.

Our regulatory philosophy here in Canada is the continued safety improvement, which is reflected in continuous implementation of new standards, new regulatory documents, and also design upgrades as a part of refurbishment activities.

So, I think, fundamentally there is a completely different regulatory philosophy.

Also, we are very open and transparent, which is documented in many IAEA documents. We are really serving as an international example of openness and transparency.

Continuous safety improvement is reflected in outstanding safety performance of our nuclear reactor fleet.

I can give many more examples, but definitely the regulatory philosophy is fundamentally different.

**THE CHAIRMAN:** Thank you.

Any other observations, questions? Okay.

Le prochain mémoire est de M. Robert Duchesne sous le numéro de documents M40.11.

**12-M40.11**

**Mémoire de**

**Robert Duchesne**

**LE PRÉSIDENT:** Est-ce qu'il y a des questions?

**MEMBRE HARVEY:** Oui, Monsieur le président.

**LE PRÉSIDENT:** Monsieur Harvey.

**MEMBRE HARVEY:** À la page 2, la préoccupation est à propos des avis en cas d'incident majeur. La personne se plaint qu'elle n'a pas pu avoir de réponse comment elle pourrait être informée à l'occasion d'un incident majeur. Elle dit:

"J'ai moi-même tenté, sans succès,

d'obtenir une réponse à cette question pourtant toute simple, élémentaire et fondamentale. La seule réponse obtenue est cette réponse vague et insignifiante : le porte-parole est les médias."

Peut-être que je demanderais à Hydro-Québec de faire certains commentaires, parce qu'elle prétend que d'autres personnes ont aussi demandé de l'information et n'ont pas pu l'avoir.

Je pense qu'on l'a touché un peu tantôt le point de l'information, mais je vous demanderais peut-être quelques commentaires.

**M. DÉSILETS:** Mario Désilets pour le verbatim.

C'est la responsabilité de la municipalité d'aviser les citoyens. Alors on a des ententes avec la municipalité de Bécancour, municipalité de Trois-Rivières et une partie -- pas une partie -- une partie de la ville de Trois-Rivières, parce que Ste-Marthe fait partie de la zone. Il y a une petite municipalité qui fait partie de la zone, et Champlain, et ça appartient à la municipalité le programme d'aviser les gens.

C'est sûr et certain que dans une situation comme ça, lorsqu'on déploie le plan des mesures d'urgence

externe et puis que la sécurité civile embarque, ils ont des personnes de communication qui sont avec eux autres qui vont déployer un plan de communication pour ceux qui ne pourront pas être rejoints.

On a travaillé avec la ville de Bécancour sur un système qui est en train d'être déployé, qui va permettre d'aviser toutes les personnes de la municipalité dans un court laps de temps.

Alors quand il dit qu'il s'est adressé, c'est embêtant pour moi de dire à qui il s'est adressé.

**MEMBRE HARVEY:** O.k. Probablement que c'est aussi du fait que vous n'avez pas de système d'alarme à l'extérieur.

**M. DÉSILETS:** Mario Désilets pour le verbatim.

Effectivement, c'est pas un système d'alarme. C'est un système de téléphonie qui va rejoindre le monde.

**MEMBRE HARVEY:** O.k. Merci.

**LE PRÉSIDENT:** Monsieur Tolgyesi?

**MEMBRE TOLGYESI:** Est-ce que -- parce qu'on ne sait pas qu'est-ce que vous allez faire, mais si vous allez le faire, ce que vous êtes supposés faire, est-ce que ça fait partie de ce programme-là aussi installer le système d'avertissement, alarme, et cetera?

**M. DÉSILETS:** Mario Désilets pour le verbatim.

Est-ce que vous parlez du système de téléphonie ou d'un autre système?

**MEMBRE TOLGYESI:** Non, je parle d'un système d'avertissement quelconque, pas entièrement téléphonie, parce qu'il y a question si les gens ne sont pas nécessairement près du téléphone.

**M. DÉSILETS:** Oui.

**MEMBRE TOLGYESI:** Alors est-ce que ça fait partie d'éventuelle réhabilitation de la centrale?

**M. DÉSILETS:** Oui, ça fait partie du plan de -- la municipalité a un certain nombre de phases qu'elle met en place et la première c'est d'aviser les gens qui sont sur le site de la municipalité.

Ensuite de ça, ils déploient avec la Sûreté du Québec une zone protégée dans laquelle ne peut entrer que le personnel autorisé et va sortir les gens que la municipalité va diriger vers les sites d'évacuation.

Alors un coup que la zone est cernée, les gens de cette zone-là sont avisés. Après ça, cette zone-là est confinée, est surveillée par -- les entrées et sorties sont surveillées. Donc si la personne se trouve à l'extérieur, la journée qu'elle va vouloir entrer, ben, elle va frapper un barrage.

**MEMBRE TOLGYESI:** Je parle maintenant de l'avertissement est du bouche-à-oreille. Il n'y en a pas de sonores ou les sirènes ou quelque chose comme ça que vous prévoyez ou la municipalité prévoie?

**M. DÉSILETS:** Mario Désilets pour le verbatim.

Pour la municipalité, le choix du système d'avertissement qui a été choisi c'est un système de téléphonie qui est en train d'être déployé actuellement. C'est pas un système d'alarme.

**LE PRÉSIDENT:** Autres questions? O.k.  
Merci.

The next written submission is for Michel Duguay, as outlined in CMD 40.12.

**12-M40.12**

**Written submission by**

**Michel A. Duguay**

**THE CHAIRMAN:** Questions?

**MEMBER HARVEY:** I think most of the points were answered. So it's just a list of -- oh, we have one.

**THE CHAIRMAN:** Dr. McDill?

**MEMBER McDILL:** On page 3, there is a -- fourth paragraph, we're referring to Gentilly-2. The



intervenor makes reference to his request to get information being denied from both CNSC and Hydro-Québec.

Maybe there could be a comment on that? It begins:

"Regarding what the CNSC info 0836 says about seismic risk for Gentilly-2..."

**THE CHAIRMAN:** Mr. Jammal?

**MR. JAMMAL:** Ramzi Jammal, for the record.

Dr. McDill, this is the question -- now, this was resolved recently where Dr. Duguay is talking about UHS and the capability to have a report requested of the operators to perform, and I believe -- Dr. Rzentkowski, you have to help me here with memory -- I believe we did release the report to Mr. Duguay, and this has been addressed through the legal channels, because there was some proprietary information, and we've ordered the release of the report and it's been, I believe, delivered to Mr. Duguay.

**MEMBER McDILL:** So between the time of writing and now, this has been resolved?

**MR. JAMMAL:** Correct.

**MR. RZENTKOWSKI:** That's correct. Both reports have been released about a week ago.

**MEMBRE McDILL:** Merci beaucoup, Monsieur.

**LE PRÉSIDENT:** Autres questions? Any other questions?

Just for clarity and certainty, still on page 3, Mr. Duguay is talking about info 836 and there are 13 safety issues that have not been resolved. These are scheduled to be resolved in 2012-2013.

Would you like to comment on those?

**MR. RZENTKOWSKI:** Those are the 13 safety issues which we identified as areas for improvement and we are assessing the safety margins in view of new information stemming from the research studies and also using new safety analysis methodologies.

Once again, we call it an outstanding safety issue, but in fact those are areas for improvement.

**THE CHAIRMAN:** So if they bear no safety issue on the decision to refurbish Gentilly-2?

**MR. RZENTKOWSKI:** No, absolutely not. Those issues will be looked at in the context of deciding on the scope of the work of the refurbishment, but only in the context of what can be improved. The safety margins, as they are, are adequate.

**LE PRÉSIDENT:** Monsieur Désilets, peut-être que ce serait une bonne occasion de supporter cette argumentation que ce n'est pas aucune lacune de sécurité qui empêche la réfection?

**M. DÉSILETS :** Effectivement, il n'y a aucune lacune de sécurité qui empêche la réfection.

Et puis en ce qui concerne les ---

**LE PRÉSIDENT:** Même s'il y a 13 défis de sécurité qui étaient ---

**M. DÉSILETS:** Effectivement.

**LE PRÉSIDENT:** --- soulignés par cette intervention?

**M. DÉSILETS:** Effectivement.

Et on travaille sur ces 13 défis-là. Même si on n'est pas certain d'avoir une réfection, on continue à mettre des efforts et à travailler pour résoudre ces défis-là.

**LE PRÉSIDENT:** Monsieur Harvey?

**MEMBRE HARVEY:** Justement en parlant de réfection, j'avais une question parce que vous êtes -- Hydro-Québec est censé terminer ses opérations, en principe -- pas en principe, mais elle doit terminer le 31 décembre.

Ma question était envers le personnel. Qu'est-ce qui se passe à partir du 31 décembre, physiquement? Peu importe la décision, qu'est-ce qui se passe? Quelles sont les obligations d'Hydro-Québec, même si le réacteur est mis à l'arrêt?

**M. RINFRET:** François Rinfret, pour le

personnel.

Le 31 décembre et même quelques jours avant, mais le 31 décembre, minuit, donc le réveillon va se faire avec un réacteur à Gentilly-2 en état d'arrêt garanti, parce que l'exploitation n'est pas permise passé cette date. Il y a une condition de permis qui empêche l'exploitation en 2013.

Au cours des derniers mois, on a discuté aussi, lors de la ré-autorisation de G-2, des conditions et du fait qu'il manquait d'information pour aller au-delà de 2013. Hydro-Québec n'ayant pas demandé d'exploiter en 2013 et n'ayant pas non plus soutenu cette demande par des analyses, il va de soi que la centrale sera arrêtée à ce point-là.

Le 31 ou quelques jours après, le titulaire, d'après les discussions que nous avons avec lui, a quand même l'opportunité d'y aller vers différents types de scénarios pour mettre la centrale soit en arrêt définitif ou en arrêt en veilleuse, c'est-à-dire de conserver la qualité des équipements, tout en étant à l'arrêt.

Peu importe les scénarios, si je me souviens du plan, il est certain que le titulaire va prendre des mesures pour enlever le -- retirer le combustible de la queue du réacteur pour le mettre en

piscine, et donc retirer un gros élément de risque pour la centrale, et ensuite vider la tuyauterie et avec ou sans protection apportée à l'intérieur des tuyauteries.

Quand on parle de la protection, on parle de mettre une couverture -- une espèce de couverture d'azote qui empêche la tuyauterie de corroder, au cas où le titulaire voudrait procéder plus tard à des -- à mener à une réfection.

Donc c'est dans les détails maintenant que le personnel de la Commission et le titulaire sont en train de regarder comment procéder, comment assurer que les critères sont bien établis, que les cédules sont établies aussi pour que -- avec les échéanciers pour que le personnel de la Commission puisse faire inspection sur le déroulement de ces activités qui encadrent la fin des opérations dans ce mode.

**MEMBER HARVEY:** Sur quelle période de temps se fassent ces choses-là? Parce qu'on ne dit pas aux employés le lendemain matin, "Allez-vous en chez vous." Il y a une période de "phasing out"?

**M. RINFRET:** Il y a plusieurs mois de travail à faire, peu importe la décision. Il y a du travail immédiat qui doit être fait peu importe la décision du Gouvernement du Québec. Et là ça dépend des scénarios qui sont peut-être choisis à ce moment-là.

Une élection, on va aller voter au mois de septembre. L'élection va probablement aider à déterminer laquelle des méthodes d'arrêt qui va être choisie par le titulaire pour que la décision soit prise ou non à ce moment-là.

**LE PRÉSIDENT:** O.k.

**M. RINFRET:** Pour les détails, je demanderais du côté d'Hydro-Québec.

**LE PRÉSIDENT:** Il faut se presser. Le temps marche.

What I would like to do is I will take a 10-minute break and then come back, and I would like to get a little update from -- a quick update from Emergency Management Ontario. We haven't heard from EMO about progress made in the emergency management area, and maybe a little update also from Health Canada about emergency management. As you all remember, emergency management was the focus -- a big focus of post-Fukushima.

So 10 minutes, coming back at five to 4:00.  
Thank you.

--- Upon recessing at 3:48 p.m./

La réunion est suspendue à 15h48

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

La reunion est reprise à 16h01

**THE CHAIRMAN:** Okay. We are back. We aim to -- we have an objective of finishing by 5:00, so we would like sort of a maybe quick-fire question and answer, and I would like to start, if the Ministry of Emergency Management Ontario is still with us.

Anybody from EMO?

**MR. CONTRA:** We're here.

**THE CHAIRMAN:** EMO? Is that EMO?

**MR. CONTRA:** Yes, it is. Tom Contra here.

**THE CHAIRMAN:** Okay. Thank you.

How about giving us a quick update as to -- last time we heard from your organization, we were really impressed with this matrix that assessed the level of emergency planning by site.

I'd just like to know where you are and maybe a quick update as to where you're going?

**MR. CONTRA:** Thank you.

One of the things you should be aware of is the last time we spoke, you had a Mr. Michael Morton in front of the microphone or telephone, and it is not Tom Contra who is leading the Planning and Development Section. So I've taken over.

Having been in the operations end of Emergency Management Ontario, I'm certainly well familiar

with all the nuclear response topics.

The work that you're referring to is continuing to progress and we are, as we have indicated in March, preparing to give you an update in November. We hope to show definite progress. Some of that work, Mr. Ciuciura already referred to this morning. So there's certainly an indication of movement.

We are continuing to work with the municipalities to make sure that the minor compliance issues that were identified are rectified, and we are hopeful that that is happening before the end of the year, as indicated.

The most exciting thing I can tell you is that we are working with Bruce Power on a series of exercises that we call Huron Challenge, and we've already had a couple of preliminary tabletop exercises and we are working to culminate in a major field exercise in October which will take into consideration some of the Fukushima recommendations and will take into consideration a large area of the Bruce Kincardine area with a dozen or more municipalities, the facility itself, Emergency Management Ontario with the Provincial Emergency Operations Centre and a number of Ministries so that we will have a large-scale scenario; not just some of the events that we've had in the past where we dealt with a local incident within



one of the facilities.

And this will be the first time in recent history that we will have taken into consideration large weather and other events that affect the operation of a nuclear facility. So that's probably the most exciting progress that we are having in this time period.

I think that's a quick overview of our activities, Mr. President.

**THE CHAIRMAN:** Thank you. That's very useful. And I hope that through this exercise we can try to get some information about what kind of periodicity we want to kind of talk about putting on various sites, how often do you do such large exercises and who are the players.

And I don't know if you mentioned the federal government agencies involved in this particular exercise also?

**MR. CONTRA:** I did not, but I meant to put that in as an add-on. Certainly your agency is well involved, Health Canada is well involved, Public Safety. We're going to have Department of National Defence, so we are going to have a number of federal departments involved as well in addition to the provincial Ministries.

**THE CHAIRMAN:** Okay. That's great.

And that's maybe a good segue to see the

Health Canada here and maybe a quick update on the new plan.

**MR. AHIER:** Yes, thank you, Mr. Chair for the opportunity to address the Commission on some of the actions Health Canada's taken certainly since the last Commission we attended on May 3<sup>rd</sup>. It's Brian Ahier, for the record.

At the time on May 3<sup>rd</sup>, we had given a status report on where we are with respect to the update and renewal of the Federal Nuclear Emergency Plan and some of the other activities related to that.

Since that time, I can report that we have completed all of our extensive consultations at the federal level with respect to the renewal of the Federal Nuclear Emergency Plan and its full alignment with Public Safety's Federal Emergency Response Plan.

And in fact, in June the plan was presented to the Emergency Management Committee of Assistant Deputy Ministers where it was agreed to send it forward to the final stage of approval, which is the Deputy Ministers Emergency Management Committee, in September.

So we are anticipating that we'll have full endorsement of that and, as part of that presentation, we will be asking for, essentially, agreement to take that forward for testing in a national level full-scale

exercise in the next year to year and a half.

We are currently in discussion with federal and provincial partners to find a potential host for a national exercise so that we can test the new arrangements of the Federal Nuclear Emergency Plan.

Clearly that requires the good coordination and participation of those partners and, as I mentioned, we're currently in discussion and we've had discussions with both the CNSC staff as well as Public Safety to try to move this along in the most effective manner.

Some other things that we can report on that address both the lessons learned within Health Canada coming from Fukushima as well as some of the actions that were in the CNSC action plan.

We've had discussions with, again, CNSC staff, Public Safety and beginning discussions with the province on holding a series of workshops, federal-provincial workshops, to basically discuss the various plans and the interfaces between them and to essentially do a scenario run-through of how the plans would work in practice. And we hope to have these workshops held over the coming months, again depending upon the availability of our provincial and federal partners.

Another aspect that we have incorporated into the FNEP that we are pursuing is to improve

essentially the national level governance for offset emergency management. And we have stated in the FNEP and we're discussing with Public Safety of moving Health Canada's FNEP committees, both the federal inter-departmental committee as well as the federal-provincial committee, more firmly under the governance structure established within Public Safety.

And we feel that will be a mechanism to provide that level of oversight and also a mechanism from strengthening for ensuring regular exercises. And that's certainly what we intend to move towards the full-scale national test of the FNEP and then continue a routine schedule of exercises within the context of the FNEP after that.

Those are some of the key areas that I'd like -- well, actually, I can touch on one other thing. You had mentioned right at the beginning the segue from EMO's presentation.

As noted by Mr. Contra, Health Canada will be participating along with other federal partners in Ontario's Huron Challenge exercise in October, and we feel this is an opportunity to exercise at least some elements of FNEP even if it's not a full-scale exercise. We view it as an important step moving towards that full-scale exercise in the next year or so.

**THE CHAIRMAN:** Okay, thank you. Very useful update.

And what I would like to do now in the remaining time is open up the last round of questioning on all we heard today. And we're starting with Mr. Tolgyesi. If you want to start with somebody else?

Okay, Dr. McDill. Go ahead.

**MEMBER McDILL:** My question is with respect to page 24 of the Integrated Safety Assessment, the big report today. And it's with respect to criticality safety.

Without going into security issues and given the current international efforts to deal with enriched uranium, what are -- what is the intention with respect to the slightly enriched uranium?

I could ask Bruce or I could ask staff. I'm not sure who's ---

**MR. LOJK:** Bob Lojk, for the record.

Dr. McDill, I will ask you to repeat the question first because it just seems unclear what you're asking. I have page 24 open in front of me.

**MEMBER McDILL:** It's page 24.

**MR. LOJK:** Yes, I have it open, yes.

**MEMBER McDILL:** Okay. How is Bruce going to deal with this issue? And Duncan's trying to ---

**THE CHAIRMAN:** We're talking ---

**MR. HAWTHORNE:** Which issue?

**MEMBER McDILL:** Slightly enriched uranium  
on site.

**THE CHAIRMAN:** Okay, got it.

**MR. LOJK:** Yes, this -- they have a program  
in place, and that's how they deal with the issue. The  
criticality safety, we created a regulatory document on --  
the CNSC created a regulatory document on criticality  
safety about two years ago, if I'm not mistaken. And  
that's available now.

And Bruce has a program, and perhaps I  
would ask Bruce Power to ask specifics if you'd like to.  
But they do have a program. It's one of the few licensees  
that does have one -- it's the only one.

Dr. McDill, Mr. Hawthorne just pointed out  
to me that they're uncomfortable speaking about this item  
---

**MEMBER McDILL:** Okay, so it's a security  
issue, then.

**MR. LOJK:** --- in a public forum.

**MEMBER McDILL:** Thank you. That's fine.

**MR LOJK:** But they do have a program, as I  
said.

**THE CHAIRMAN:** Mr. Tolgyesi.

**MEMBER TOLGYESI:** Yes. It's under page 79. It's specifically to Pickering. There is a note that:

"Housekeeping and transient material control continue to be an issue at both Pickering A and B as deficiencies in these areas were repeatedly observed during site staff inspection."

I have one -- two questions, really. One is what do you do to solve that, to correct this situation? And two, how come staff, when we are talking about this, we are saying that the performances are satisfactory?

So maybe we should start with Pickering.

**MR. TREMBLAY:** Pierre Tremblay, for the record.

This is sort of an overall issue around housekeeping. And you know, I would say that we're not where we need to be in this area. What have we done about it?

Certainly as part of the amalgamation of Pickering, this is kind of the outcomes of it. We've taken a look at some of our work areas and we've consolidated a number of them.

So the focus for Glen and the team at

Pickering is to reduce the number of workstations, clean them out basically.

So there's a fairly aggressive plan to reduce the number of temporary locations. There's been about a 50 or 60 percent reduction in those over the last 18 months to two years. It's a work in progress.

One specific thing that they've done, re-instituted in fact, are the senior management walkabouts and feel that it's to help focus the team on improved task keeping.

So a work in progress. A number of good counter-examples in terms of things being done but still - - still work to be done at the plant.

I would also add that one of the things that Glen has put forward as part of the overall plan is sort of a deep cleaning approach to the facility in a number of targeted areas, and so we'll be supporting that as we go forward.

So work in progress, a bit of a recalibration there but -- but I'm confident the team is making progress.

**MEMBER TOLGYESY:** Do you have a timeframe when you think that we'll achieve this goal; at the end of 2002 (sic) or February 28, 2013?

**MR. TREMBLAY:** Pierre Tremblay for the



record.

I hope it's not 2002, that's long gone. I expect constant improvements. It's never really over. To be honest, the plant tours and the increased focus has started a number of months ago, and we're starting to see some improvement.

But let me put it this way. I don't expect this issue to be an item for discussion for next year's report.

**THE CHAIRMAN:** Thank you. Ms. Velshi.

**MEMBER VELSHI:** It's a follow-up to the same question. As one looks at Pickering and the different areas, one can't help but notice there are a number of things that seem to be out of step with the rest of the report. Now, some are clearly to do with aging, like the higher unplanned capability factor or perhaps the high number of reactive trips.

But then if we look at missed mandatory system tests, the housekeeping deficiencies you spoke about, the asbestos issue and the need to recalibrate the leadership team; certification deficiencies and low success rate; limits of work getting exceeded; minimum safety complement not being met.

As you pull all of those together, does it not ring some alarm bells that perhaps there's some

systemic issues that need to be addressed. And that maybe in one narrow area it may be satisfactory but as you pull all these things together, that there may be something bigger to worry about?

**MR. TREMBLAY:** Pierre Tremblay for the record.

You know, clearly, there are a number of issues as there are on any site. You know, I'm not going to get into every -- every issue, you know, that you've laid out.

Clearly, the material condition of the plant needs to continue to improve. The reliability, particularly on 1 and 4, is the focus of the team. We have essentially made a change in the way we manage the site, consolidating it to sort of introduce a more common set of standards across the facility.

Certainly, we ask ourselves those questions. We do trending and we do analysis and while there are challenges, I'm confident that the team is on top of them, are adequately focused and are getting improved results.

Are we where we need to be? Of course not, but we have a strong team and a well-focused team. And you know these are questions that we ask ourselves.

I would say, you know, in the complement --

just to touch on a few of these things because you've raised them. In the minimum complement issue, there -- we've essentially put a very good program in place for monitoring minimum complement. The issue that's raised in the actual report constitutes one event where for a period of about 10 minutes, the site was below complement as a result of a medical emergency.

So you know, this is an area that we've had in front of the Commission in the past and an area we're in a completely different level of performance.

So I don't see that as a problem. I see that rather as an area of significant improvement. I note the deficiency. I'll certainly acknowledge it but we certainly have done quite a lot in that area.

Are there things to work on? Absolutely. Do I see the site heading in the right direction? I do, but I acknowledge that there's a fair bit of work left to do and we're committed to doing it.

And furthermore, I would say that while the life of the plant may be limited, I'm focusing the team on driving at excellence and basically not allowing them to be excused or to really excuse themselves for a limited life. And so what you are seeing and what you continue to see is very strategic but significant investment in the power plant to drive the level of performance to a much

higher level.

**THE CHAIRMAN:** Okay. Thank you. Monsieur Harvey.

**MEMBER HARVEY:** Merci, monsieur le president. Page 22 of the report, second paragraph:

"Independent technical panel and shutdown system effectiveness criteria."

I'm not sure I understand very well that paragraph there. I understand the process but are you talking of the automatic shutdown system?

If it's so, I thought it was automatic, but you are trying to find some criteria to measure the effectiveness. So could you just explain that, why the need of the independent technical panel and who is on the panel?

**MR. RZENTKOWSKI:** This is a very complex technical issue. It relates to the onset of dry out under accident conditions, onset of dry out on the surface of fuel. And we don't really understand -- actually, I shouldn't say we don't understand but we don't really have enough experimental evidence to demonstrate fuel behaviour under accident conditions. And this independent panel was supposed to assess the need to perform this kind of experimental studies and identify the gaps which need to

be addressed for eventual experimental investigations.

Once again, it's not directly related to shutdown systems. It's simply related to the fuel behaviour under accident conditions.

**MEMBER HARVEY:** Okay. I think I understand that. Thank you.

**THE CHAIRMAN:** Dr. Barriault?

**MEMBER BARRIAULT:** Thank you, Mr. Chairman.

Page 132 of 12-M40, Environmental Monitoring, Point Lepreau.

My understanding and probably it's probably in there but I missed it. There was supposed to be an evaluation with the Department -- with CNSC and staff and the Department of Fisheries and Oceans conducting a site visit to look at, I guess, entrapment and impingement at the plant. Has that been done? It was supposed to be done in 2012.

Environmental Monitoring, first paragraph. I've done it. Just a simple ---

**MR. RZENTKOWSKI:** Yes, it's a simple question but we don't know the answer at the moment. So we requested Berton Valpy who is the site supervisor at Point Lepreau ---

**THE CHAIRMAN:** I think Point Lepreau, can you help us on this? Go ahead.

**MR. VALPY:** I think I'll start. Berton Valpy, Inspector, and then I'll transfer to Mr. Thompson.

Environment Canada and the Department of Fisheries and Oceans was on site this spring to have a preliminary promotional visit with the station and set up relationship with us, the site office, and with the licensee. They're now working into the next phase of starting to take the first steps to define the relationship and what expectations are going to be applied to Lepreau in the future. So with that, I'll pass to Mr. Paul Thompson.

**MR. THOMPSON:** For the record, Paul Thompson, I'm the Regulatory Affairs Manager for Point Lepreau.

Yes, as Mr. Valpy has indicated, there was a promotional visit. A lot of information was discussed. I think I just might reiterate again that what we did was we discussed and demonstrated the design that we had for the intakes.

As you know, with -- it is a relatively deep-water intake with a velocity cap. It was state-of-the-art design as referenced by Environment Canada.

The design was for two units, so therefore the overall capacity is quite high, so it means reduced flows in through the unit.

There have been multiple studies performed on this, and 1989 studies look specifically at fish entrainment and impingement and did not identify any issues. It's been included in various environmental assessments for Lepreau.

In addition, the thermal plume has been studied many times by the Bedford Institute.

So we continue to look and engage and look forward to these ongoing discussions, but we believe that we've got a very good design for our intakes at Lepreau.

**THE CHAIRMAN:** Will there be a report that will be made public as a result of all of this commitment? Anybody? Staff or -- I assume it's going to be Point Lepreau that's going to do the report together with Health Canada and CNSC?

**MR. THOMPSON:** The promotional visit would be documented, I believe, on the regulatory side. The positions that we have on our intake are well documented in our various environmental assessments. So we weren't going to produce anything more at this point in time.

**MEMBER BARRIAULT:** It was supposed to be included in the NPP report, I guess, today. Am I wrong in assuming this? That's what it says.

**MR. RZENTKOWSKI:** That will be in the next year's report.

**MEMBER BARRIAULT:** Next year?

**MR. RZENTKOWSKI:** Yes. We'll provide the update on the results of this study.

**MEMBER BARRIAULT:** Okay. Thank you.

Thank you, Mr. Chairman.

**THE CHAIRMAN:** As you can well imagine, we're very sensitive when the Commission makes a commitment to do something; we expect somebody to follow up on it.

**MR. RZENTKOWSKI:** Absolutely. CNSC staff is very sensitive to this issue too.

**THE CHAIRMAN:** Okay. Thank you.

We're going into our next round again. No questions?

Mr. Tolgyesi?

**MEMBER TOLGYESI:** Yes. On page 22, deterministic safety analysis:

"CNSC staff continues to monitor the industry work aimed at resolving the CANDU safety issues related to coolant void reactivity."

One comment was one of the intervenor's also on a paper we were presented. They were talking about that.

**THE CHAIRMAN:** We've got page 22. It's a



big page. Where?

**MEMBER TOLGYESI:** At the beginning, right at the first -- "large loss of coolant accident".

**THE CHAIRMAN:** Okay. Got it.

**MEMBER TOLGYESI:** Okay.

"CNSC staff continues to monitor the industry work aimed at resolving the CANDU safety issues related to coolant void reactivity."

And as I said, it was a written intervenor's question.

**MR. RZENTKOWSKI:** It is our intention to bring this work to the conclusion by the end of 2013. I would like Dr. Michel Couture to describe the status of this work.

**MR. COUTURE:** Michel Couture, Director of Physics and Fuel Division, for the record.

About in 2007 and 2008, there was a group formed between the industry and the CNSC to make recommendations regarding work to be done to resolve what was known as the Large Loca safety margin issue.

A number of activities were identified and the industry has formed a group, a working group on Large Loca to address -- and essentially, this group right now, what it's doing, it's looking at a new analysis framework

to assess the Large Loca accident.

So that would involve also addressing the void reactivity coefficient value, try to find a bounding value so that we can, once and for all, put it aside.

So currently what it's doing, it's looking at the whole analysis framework of the Large Loca, and there's good progress, and they're expecting a report by, I would say, July or June 2013, at which time the CNSC will be reviewing it, and the final decision regarding the framework that will be proposed by the industry. So they're having their group of experts looking at all aspects of the Large Loca analysis.

**THE CHAIRMAN:** Good.

Dr. McDill, still no?

Ms. Velshi?

**MEMBER VELSHI:** If we turn to page 64 of the report, it's a question for staff on the tritium removal facility, the second paragraph. There's just sort of a single line that the operation of the TRF did not exceed any environmental limits.

My question to staff is does the CNSC do any formal assessments of the TRF, you know, given how critical it is to certainly the multi-unit stations, both about its reliability and its long life?

**MR. WEBSTER:** Thank you.

It's Phil Webster, for the record, the Darlington Director.

Yes, Darlington site staff inspect the TRF on a regular basis. It's part of their normal -- what we call surveillance rounds, and they also do focused inspections, both during normal operation and during outages. So we keep an eye on it regularly, and as we would for the station itself, we open action items or directives as necessary.

**LE PRÉSIDENT:** Monsieur Harvey, vas-y.

**MEMBER HARVEY:** Generic action items, at the end of that paragraph:

"Due to anticipated closure of GAI in 2012, this will be the final year of providing information on GAI at the NPP report."

This is not to say it's finished because you will report in another -- I should say on the CANDU safety issue. Is that the reason?

**MR. RZENTKOWSKI:** That's correct, because one of the objectives of defining the set of CANDU safety issues is also to bring to a resolution generic action items.

In 2011, we're left with four generic action items. Two were closed during the course of the

year and two were reassessed and now will be tracked under CANDU safety issues. So effectively, there is no generic action items left.

**MEMBER HARVEY:** Thank you.

**THE CHAIRMAN:** Dr. Barriault?

**MEMBER BARRIAULT:** Just a brief question.

Page 134, the Point Lepreau emergency exercise 2012, if I understood correctly, we're supposed to get a report today on that if it was ready? Maybe it's not ready yet. I'm not sure. The 2012 Point Lepreau emergency exercise.

**MR. RINFRET:** François Rinfret for Point Lepreau.

I think the Lepreau regulatory program, we have seen a draft circulating. I cannot recall if we have actually sent it. I apologize, but it's very near production at this point.

**MEMBER BARRIAULT:** Okay. Thank you.

**MR. RINFRET:** We confirm that.

**MEMBER BARRIAULT:** Thank you, Mr. Chairman.

**THE CHAIRMAN:** It will eventually be reported somewhere, right?

**MR. RINFRET:** Yes. And I suppose the question would have been what does it contain? Well, it's pretty positive about the actual response by the licensee

and also with its communication and relations with the other levels of government.

We were present onsite. We were present also at the provincial operations centre. So we have pretty positive aspects of it and, of course, anything that is not to our satisfaction will end up as an action request from us to the licensee.

**THE CHAIRMAN:** But since you missed this reporting time, I don't think you have to report until -- you don't have to wait until 2013 to release a report, particularly if you have -- you know, if it's useful for the public?

**MR. RINFRET:** No. A report is sent as soon as it's approved and ready to go. It is made public. All of our work is public except those that have been security-labelled as protected. It's public and accessible, with pleasure.

**THE CHAIRMAN:** Thank you.

Dr. McDill, I'm going to ask you every time.

Mr. Tolgyesi?

**MEMBER TOLGYESI:** On page 120, this is regarding Pickering. It's saying that the work is being undertaken by the industry to demonstrate that the reactor pressure tube design life is at least 247,000 instead of

210,000 equivalent full power hours.

Where is the work in progress?

**MR. RZENTKOWSKI:** This project is almost a destiny issue for all operating reactors. We want to extend their safety case far beyond 210,000 hours of effective operation. Because of the importance of this project, we have a protocol in place between the CNSC, OPG and Bruce Power. So the work is monitored in accordance with this protocol.

Up to this point in time, the work is unfolding in accordance with the schedule.

Regarding the technical details, I will flip it over to Mark Elliott, who will provide a better answer.

**MR. ELLIOTT:** Just to build on that, the protocol talked about -- let me back up.

We realized that -- we felt there was more life in the pressure tubes. And, about 2009, we initiated a project to go out and prove that, and that involved research, and this protocol that Greg has talked about has 18 research reports to look at every aspect of this to show that there was more life in the Pickering pressure tubes and we are marching down that. I think there's 16 reports that have been issued to date out of the 18.

And so we're making good progress and we do

expect to be able to confirm that Pickering can operate to that 247 number that's in the report.

**MEMBER TOLGYESI:** When do you expect that you will have some ---

**MR. ELLIOTT:** This year, in 2012 we expect to be able to declare that.

**THE CHAIRMAN:** Thank you.

Ms. Velshi?

**MEMBER VELSHI:** The report, if you turn to page 66, for instance, under "Fitness for Service", the life cycle management is the last section for Darlington, and Pickering and Lepreau has a similar section on life cycle management.

But as I was looking at the Bruce one on pages 55-56, there was no mention made of the life cycle management plans.

So a question for staff: is that just an oversight, for not including that?

**MR. LOJK:** Bob Lojk for the record. Yes, it appears to be an oversight.

**MEMBER VELSHI:** And just to confirm, there are no significant issues with life cycle management plans for the Bruce ---

**MR. LOJK:** That's right, Madam. They were all equivalent sections. Thank you.

**THE CHAIRMAN:** And I'd piggy-back on that one. On page 55, however, I'm always -- I always like to read the maintenance protocols, and if you look at 55, maintenance, it says that:

"Areas for improvement include work completion...because Bruce B was at 74 percent below the industry average."

That's not a good mark.

**MR. LOJK:** Bob Lojk for the record.

You're quite right. Over the years -- over the years, you may have seen this issue come up. The former head for Bruce Power of the Maintenance Division is sitting with us today. I think -- and he can enlighten you on this, but essentially, what happened, as I go back to the history, is that they had to re-analyze their numbers on what needed to be done with and what didn't need to be done. Their program has shown tremendous improvement over the years. They basically re-baseline and started over again.

So, in certain cases, their numbers are not optimistic because they've had to add a whole bunch of things to their systems that were never seen in the first place.

So while the numbers may not be up to



industry par, they are getting there and the program is good and robust and it's managing to do all the work.

So they are no issues with equipment because of lack of maintenance, but the program is slightly behind where it should be, and perhaps I would ask Bruce Power to provide some more information on that.

**MR. HAWTHORNE:** So for the record, Duncan Hawthorne.

I can give you the short answer or the long answer.

**THE CHAIRMAN:** Short answer, please.

**MR. HAWTHORNE:** The short answer is it's 84 today. That's the short answer.

**THE CHAIRMAN:** And when are you going to be

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**MR. HAWTHORNE:** You want a medium answer?

The medium answer is, as I pointed out earlier and have done every time I've come here, maintenance backlogs and ratios is one of a basket of indicators that tell you how well a plant's running. I pointed to you earlier to show that the base performing plan and unplanned transients and all these other areas as Bruce B, yet it's the one that's got a 74 percent.

So there's a question mark about how do you look at all these things together. Our focus on the plant

has been equipment reliability.

In order to deal with equipment reliability, as Bob points out, we looked at our maintenance program. We decided that we're going to revisit that entirely and make sure that we were doing routine maintenance on the right things.

I told this Commission for probably the last five years that we're going to do it in that order because we believe that was the best way to get what Pierre talked about earlier. It's all about reliability, and we have seen a very marked improvement in reliability of our kit because we're focused on equipment reliability. Even if this ratio is lagging, it is not a lagging indicator that we particularly care about because equipment reliability is our enforcing function, which is why Bruce B, if you look at the in-plant transients, if you look at operator workarounds, if you look at maintenance backlogs, it's progressing better than the other units.

**THE CHAIRMAN:** Thank you.

Mr. Harvey? Dr. Barriault? I'm going back. Mr. Tolgyesi?

**MEMBRE TOLGYESI:** La dernière.

**LE PRÉSIDENT:** Vas-y. We have another 25 minutes.

**MEMBER TOLGYESI:** Je parlerai à Hydro-Québec parce que ---

**LE PRÉSIDENT:** Le micro.

**MEMBRE TOLGYESI:** Page 101, aptitude fonctionnelle, Hydro-Québec, Gentilly a aussi l'aptitude d'entretien 73 pourcent, ce qui est aussi faible que celui qu'on a parlé l'année dernière pour Bruce, qui était 74.

Est-ce qu'il y a quelque chose que vous faites et quoi pour améliorer ça?

**MR. DESBIENS:** Patrice Desbiens, Chef des services techniques.

On a fait nous-mêmes exactement la même conclusion et en début d'année on a mis sur pied un processus beaucoup plus rigoureux et beaucoup plus rigide pour s'assurer de réaliser tous les entretiens qui sont nécessaires.

Comme chef des services techniques maintenant, je dois approuver toute déviation à notre programme d'entretien. Donc, ce qu'on vise c'est de le réaliser à 80 pourcent -- à 95 pourcent pour les systèmes qui sont importants pour la sûreté et à 80 pourcent pour les autres et j'ai mon mot à dire pour autoriser toute déviation à ça.

Depuis qu'on a mis en place ce processus-là en début d'année, de mois en mois, on voit les

statistiques augmenter et puis on est en route vers 90 pourcent pour les systèmes importants pour la sûreté.

**MEMBRE TOLGYESI:** Ça veut dire que vous êtes où entre 73 et 90 là?

**MR. DESBIENS:** Là, j'ai pas les chiffres précis mais en date du milieu de l'année on est à peut-être à 88 pourcent, quelque chose comme ça.

Donc la statistique globale pour l'année 2012 devrait être beaucoup supérieure à celle qu'on a vue l'an dernier.

**MEMBRE TOLGYESI:** Et ma dernière, c'est en ce qui concerne la fréquence des taux de gravité qui est beaucoup plus élevée chez vous que dans les autres entreprises et vous dites que c'est surtout pendant l'arrêt -- pendant principalement l'arrêt que la fréquence des accidents augmente.

Quelle est la cause ou quelles sont les causes? C'est à la page 103, fréquence et taux de gravité des accidents.

**M. DÉSILETS:** Mario Désilets pour le verbatim.

Durant les arrêts, habituellement notre performance est assez bonne. Je sais pas d'où vient le texte -- j'ai pas pu le vérifier. Les accidents qu'on a eus, taux de gravité là, la raison -- la principale raison

pour laquelle il est élevé, c'est qu'on a un employé qui, en 2010, a fait une chute et il s'est pas re-présenté au travail de l'année 2011. Ça fait que ça a fait augmenter le nombre de jours d'absence. Et il est revenu au travail en début de cette année.

Ça fait que c'est sûr que notre taux de gravité est élevé à cause de cet événement-là.

**MEMBRE TOLGYESI:** Ce que je comprends pas le taux de gravité c'est le nombre de jours perdus par accident et si c'est sept et si vous avez un accident, ça fit pas avec l'année.

**M. DÉSILETS:** Mario Désilets pour le verbatim.

On a eu d'autres accidents, mais il y a un particulièrement qui a été dommageable sur le sept -- dans le calcul pour arriver au sept.

**M. RINFRET:** François Rinfret pour le personnel.

Si vous voulez que je vous donne une liste un peu de ce qui s'est passé au cour de l'année en terme de trimestres, ce sont tous des incidents qui affectent les mains, le dos, les jambes, des chutes, des accrochages. En général, c'est ça qui se passe pour Gentilly. Il y en a eu neuf pendant le dernier trimestre de 2011, une petite entorse lombaire, une épaule, un pouce

droit coincé, ce genre de chose.

**THE CHAIRMAN:** Ms. Velshi?

**MEMBER VELSHI:** My last question, page 32 of the report on periodic inspection of plant components, a question to staff. There are a number of different editions of the CSA Standard mentioned here and different plants seem to be complying or transitioning to different -- whether it's 2005, 2009, 1994 edition, whatever.

So the question is more general on what is the regulatory requirement, and when a new CSA standard comes up, I mean, what's the requirement to get into compliance with ---

**MR. RZENTKOWSKI:** So there is a two-step process. In the first step, we engage the industry in the discussion to define the implementation plan for the new standards.

When the implementation plan is agreed upon, in the second step we revise the licence because, -- actually, under the new format, we don't have to revise the licence anymore. We only revise the Licence Condition Handbook to include the new standards under compliance verification criteria. That's how it looks like, generally, we are very open and transparent because we want to be sure that there is some regulatory predictability. We engage the industry in those up-front

discussions to be sure that the implementation plan can be effectively executed in practice.

**MEMBER VELSHI:** So in here, where Hydro-Québec is now transitioning to the 2005 edition, but a 2009 edition has now been issued, you know, I'm just trying to reconcile that. Why would you go through an interim step when a newer edition is now available?

**MR. RZENTKOWSKI:** Typically, we introduce the new standards at the relicensing stage.

In the case of G-2 station, the relicensing took place in March of 2010. However, we didn't introduce these new standards because -- sorry, I interrupted my sentence -- because we didn't have an agreement on the implementation plan. So we definitely have to work on it, firm it up and transition to this new standard.

**THE CHAIRMAN:** Okay. Last chance.

I have one last question and maybe -- I've heard a couple of times people talk about Darlington, the modified fuel bundle. Tell me a little bit about this. I heard a couple of times about this new configuration, and I guess the people attribute a lot of amazing performance, better performance, improved performance. I want to know when are you going to come in front of us and really show us how good this new configuration and what other configurations have you tried?

I mean, after so many years, to come up with a new configuration, it looks like somebody is thinking new ways of improving the old reactor performance.

**MR. ELLIOTT:** Mark Elliott, for the record.

**THE CHAIRMAN:** Maybe you can fix the positive void reactivity somewhere.

**MR. ELLIOTT:** Mark Elliott, for the record.

Yesterday, you heard a lot about the heat transport aging, and that's why an issue of NOP analysis was necessary. That was one approach to dealing with the heat transport aging.

Another approach is a physical change. The issue, in a nutshell, is as the pressure tubes age, they expand circumferentially, and so the water goes around the fuel and doesn't go through the fuel anymore, through the little passageways in the fuel.

So what the 37 modified -- 37-M fuel does, is the centre element is a little smaller and it allows -- and that allows more space for the coolant flow to go through the fuel bundle instead of around the fuel bundle. So that change counteracts the aging and expansion of the -- the diametrical expansion of the pressure tube. So it's a physical change that mitigates the aging effect on the fuel.



And so that -- we saw that as a useful thing to do to help with the NOP -- with the aging. We initiated a trial and did some trial bundles into the reactor. We got approval from the CNSC to do that. That trial went well.

Now we have approval for full-scale implementation, but taking credit for it has not been approved by the CNSC, and we'll be making a submission on that soon and looking for CNSC acceptance of that in 2013 to take credit for counteracting the aging.

**THE CHAIRMAN:** Where is this kind of research being conducted? Who came up with this idea and any other schemes that are being tested?

**MR. ELLIOTT:** It started off with a CANDU Owners Group project. OPG then took it from there. We have the intellectual property for that particular bundle. We took it from there. We did testing at labs, Stern Lab in Hamilton. Also, there's inspections that get done at Chalk River Labs to ensure that the fuel is not -- has performed well.

**THE CHAIRMAN:** Thank you.

Okay. Well, thank you all for your patience and for the presentations, and this concludes our meeting.

Marc, anything you want to say about

anything?

**( LAUGHTER/RIRES )**

**THE CHAIRMAN:** Okay. Thank you.

**MR. LEBLANC:** The only thing, for those that have interpretation devices, last time we lost a few, so please return them, because if not, you'll be without your driver's licence for a while.

--- Upon adjourning at 4:51 p.m./

La reunion est levée à 16h51