Canadian Nuclear Safety Commission

Commission canadienne de sûreté nucléaire

Public meeting

Réunion publique

January 16th, 2013

Le 16 janvier 2013

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

Salle d'audiences publiques
14e 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

TABLE OF CONTENTS

TABLE OF CONTENTS

Ottawa, Ontario

--- Upon commencing on Wednesday, January 16, 2013 at 9:04 a.m./L'audience débute mercredi, le 16 janvier à 9h04

1. - 13-M1

Opening Remarks

Mr. LEBLANC: Bonjour Mesdames et Messieurs. Bienvenu à cette réunion publique de la Commission canadienne de sûreté nucléaire.

We have simultaneous translation. I would ask you to please keep the pace of speech relatively slow so that the translators have a chance to keep up.

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

I would ask to please identify yourself before speaking so that the transcript are as complete and clear as possible.

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

I would also like you to know that this proceeding is being video webcasted live and that archives of these proceedings will be available on our website for

a three-month period after the closure of the proceedings.

Please silence your cell phones and other electronic devices.

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

President Binder is following instructions as also everybody else is.

Well, I could mention that the *Nuclear Safety and Control Act* authorizes the Commission to hold meetings for the conduct of its affairs, so we will ask you to please refer to the agenda dated January 10th for the complete list of items to be presented today.

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

Mr. President.

THE CHAIRMAN: Thank you, Mark.

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

Mon nom est Michael Binder. Je suis le président de la Commission canadienne de sûreté nucléaire.

Je vous souhaite la bienvenue and welcome

to all of you who are joining us through the webcast.

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

We have already heard from my Secretary, Mr. Marc Leblanc and we also have Mr. Jacques Lavoie, Senior General Counsel to the Commission.

So, I would like to call for the adoption of the agenda by the Commission Members, as outlined in CMD 13-M2.A.

For the record, the agenda is adopted.

2. - 13-M2.A

Adoption of Agenda

THE CHAIRMAN: I would like now to call for the approval of the Minutes of the Commission meeting held on October 24-25, 2012. The minutes are outlined in CMD 13-M3.

3. - 13-M3

Approval of Minutes of

Commission Meeting held

October 24 and 25, 2012

THE CHAIRMAN: Are there any comments, additions, deletions, et cetera?

Ms. Velshi?

MEMBER VELSHI: I do have follow-up questions for staff on item no. 9 in the draft minutes that deals with the heavy water leak at Pickering in October 2012 and its reported here that “two workers received doses between 2 and 3 milliSieverts as a result of that leak”.

There was a report on the CNSC website suggesting that these two workers actually exceeded the regulatory limit and there was a linkage provided to the OPG website and that came soon after our October 24th meeting. And I had followed up with the Secretary on this particular issue on really what was the dose and had any regulatory limits been exceeded and in checking both the CNSC and the OPG websites this past weekend, I see that the CNSC website still has the headline “Regulatory Doses Exceeded by a Couple of Workers at Pickering” whereas the OPG website doesn't anymore; I believe it did so in October.

So, perhaps I can get some clarification on why the misinformation and is there a process for changing

whatever is on our -- on the CNSC website.

MR. RZENTKOWSKI: Thank you very much for this question.

Greg Rzentkowski for the record.

We'll follow up on this event in the relicensing CMD which is being prepared for the February Commission hearing. But nevertheless, we are also prepared to provide update today and I will ask Mr. Miguel Santini to respond to this question.

MR. SANTINI: Miguel Santini for the record.

And, effectively, there were four workers that went -- that were presumably above the action level or to have some treating intakes - sorry about that - during this maintenance work and details confirm that actually, two of the workers were below the plant dose for activity which is -- usually what the licensees do, they plan these doses as much for this activity because there is some risk and they want the workers to acquire doses below that planned limit.

Two of the workers, contrary to that, went above that plant. The determination, it turned out that one of the workers went slightly above the action limit, not the regulatory limit, but the action level.

The action level for this type of -- for

taken intake is 2 milliSieverts. One of the workers went up to 3. The other worker went below the action level -- I believe it was around 1.9 milliSieverts and the regulatory limit is 5 milliSieverts for a year.

Sorry, it's not 5 -- Yes, it's 5 milliSieverts.

MEMBER VELSHI: Yes. No, my question was -- and you should probably confirm this -- the CNSC website actually says “exceeded the regulatory limit”, not the action level.

MR. SANTINI: We will verify this information on the website. I believe it referred to plant dose but work plant was not mentioned there, so I think that the exact text is “exceeded the dose”, "regulatory dose”.

But, we will verify the correctness of the information because, of course, it has to be factual, and if it's not, we will correct this as soon as possible.

THE CHAIRMAN: Mr. Jammal, you want to add something?

MR. JAMMAL: Ramzi Jammal for the record.

Ms Velshi, you're asking about the process we have about communication, we will look into this to make sure that that's not going to happen because you're raising a very good point.

The Regulatory Body has to be up-to-date on -- with respect to the posting and we will review it. It's a very good point; we dropped the ball on this one, if I may say, and we'll look after it from that perspective.

MEMBER VELSHI: Thank you.

THE CHAIRMAN: Just to follow up: I assume, when the licensees update their stuff, did they tell you that they are updating it, and vice versa? I mean, it should be -- make sure that the same information is on both sites.

MR. JAMMAL: Ramzi Jammal for the record.

You're correct, Sir. It's really relying on the update from the licensee. I don't have the precision with respect to the question is (sic). We link to the licensee's posting and did we do it at this time or not? I really don't have that precision.

But, the process should be the following: if the licensee posts, we will link to the licensee's website and if there are any updates, then we will link to those updates.

THE CHAIRMAN: Okay. Thank you.

Any other comment?

I have one for item 10. You promised to update the Commission on the Asbestos situation. The

action says “somewhere in January”.

Well, we are in January. When are we expecting this update?

MR. RZENTKOWSKI: This update, as I indicated before, is provided in the relicensing CMD, which will be presented to the Commission in the February hearing. Nevertheless, Mr. Miguel Santini can provide further details today.

MR. SANTINI: As mentioned during the presentation to the Commission we are working with the Ministry of Labour very closely on following up on this issue.

The Ministry of Labour sends inspectors to the site and sent specifically for this event in the turbine hold in the Pickering A event to follow-up.

As a consequence, there were six orders issued by the Ministry of Labour to OPG and most of the orders referred to training -- augmented training to staff, augmented documentation needed to show staff where the hazards are located, et cetera.

And my understanding -- we do have Glenn Jager connected through video, I believe. My understanding is two of those have been closed already and OPG is working as per planned with MOL to close the other two, but perhaps OPG could update us a bit more on the

line.

THE CHAIRMAN: Okay. Is OPG -- Mr. Jager, are you online?

MR. JAGER: Can you hear me?

THE CHAIRMAN: Yeah, go ahead.

MR. JAGER: Okay. Glenn ---

THE CHAIRMAN: We can see you now too.

MR. JAGER: Glenn Jager, for the -- okay, excellent. Glenn Jager, for the record.

Miguel's correct. We have closed a number of those orders that were received from the MOL visit.

There are some orders that remain open and they pertain to longer term remediation and correction of deficiencies on asbestos insulation within the plant. That takes some time to get to, owing to outage cycles and access constraints in terms of they're at elevated locations and so forth.

So there is a longer term plan to remediate those locations.

That is the subject of some of the orders and we're working through that. We committed to the inspector to complete those and all the other orders and the commitments have been met to date. And we'll obviously be bringing a more fulsome update when we get to

the relicensing period.

THE CHAIRMAN: Okay, thank you. Thank you very much.

Any other comments?

So do we have an approval and adoption of the minutes? So for the records, the minutes are approved.

MEMBER BARRIAULT: Mr. Chairman, abstain.

THE CHAIRMAN: Okay. You were not there, right.

MEMBER BARRIAULT: Exactly.

THE CHAIRMAN: All right. Thank you.

We will now proceed to the status report on power reactors which is under CMD 13-M4 and Mr. Rzentkowski, the floor is yours.

4. Status Report

4.1 - 13-M4
Status Report
on Power Reactors

DR. RZENTKOWSKI: Thank you very much.

I just wanted to note that we are trying a new process, and this written status report was prepared

yesterday. So it is as recent as it gets.

Nevertheless, we have one oral update which we would like to present to the Commission. This is with regard to the construction incident at the Darlington site which took place last evening.

Mr. François Rinfret, who is the Director of the Darlington Program, will describe the event.

MR. RINFRET: So good morning. François Rinfret, for the record.

Yesterday, on January 15th, a contractual worker was installing a water pipe in a trench north of the station for new domestic water and sanitary sewer lines, specifically on Park Road, so near there, north of the railway line for those who are familiar.

The trench was about seven metres deep. At quarter to 5:00 in the afternoon, part of the excavated wall below the trench box gave way, thrusting the worker to the opposite side of the trench box, hitting his shoulder and the earth covered a significant part of his body.

An outside 911 call was made. Police and ambulance responded. The person was taken to hospital for assessment. The worker suffered a skeletal injury, basically a dislocated shoulder and he’s still being assessed at the hospital.

The scene has been secured. OPG project staff has halted all excavations on site until further notice as a precaution.

The contractor notified the Ministry of Labour, who will arrive on scene or may already be on scene today, Wednesday, January 16th.

CNSC staff, also per their memo of understanding with MOL, independently informed the Minister of Labour of this incident by email.

Of course, OPG has recorded this event and will follow up.

CNSC staff was informed of the incident by email and phone call yesterday evening and our inspectors will wait for an opportunity to visit the incident scene; that is, when the conditions permit.

So these are very early circumstances. Some of this had not really been verified and reported formally to the CNSC, so we'll be taking that with all necessary precautions on the injuries and everything else related to this event and we'll inform you should there be anything of interest for the Commission.

Thank you.

THE CHAIRMAN: Thank you.

DR. RZENTKOWSKI: Mr. President, Members of the Commission, we have no further oral updates to the

status report, but of course we are prepared to answer any questions you may have on the status report and events reported in the status report.

THE CHAIRMAN: I'd like to open the floor for questions, and I have an order here starting with Monsieur Harvey.

MEMBER HARVEY: Let me ask you a question. The first one is for Bruce A. You mention that the last remaining hold point is the commissioning of the annulus gas system.

Is that the reason why you approved only 90 per cent of the full power? What is the impact? Has that any impact on the security or the operation of the station?

DR. RZENTKOWSKI: The commissioning of the annulus gas system is the last point in the commissioning activities. After that, if the problem will be resolved, we'll be in a position to release the last hold point and the unit will be in a situation to resume normal operation.

In this situation, we had to -- we decided to give approval for 90 per cent of full power operation because the condition of the annulus gas system, or the degree of blockage of the channels, is a function of temperature and, therefore, a function of power.

So to fully understand the extent of the condition, we had to allow to raise the power to 90 per cent so that the entire temperature range can be tested.

MEMBER HARVEY: I see. Okay. Thank you.

Une autre question pour Gentilly-2. Quel est le statut des employés maintenant, des employés de la Commission à la région? Est-ce que les employés vont rester là pour une certaine période de temps? Pouvez-vous élaborer un peu sur ça?

DR. RZENTKOWSKI: Je voudrais rediriger cette question à Monsieur Benoît Poulet, qui est le Directeur du programme de la réglementation de Gentilly-2.

M. POULET: Merci. Benoît Poulet, pour l'enregistrement.

Le personnel de la CCSN qui travaille au site est encore au site en fonction et puis ils sont en contact avec les ressources humaines et, si vous voulez, l'échéancier pour le transfert éventuel à d'autres fonctions est en cours avec les ressources humaines. Donc pour le moment, ils sont en fonction au site.

MEMBRE HARVEY: Mais ils ne sont pas là très, très longtemps d'après ce que j'entends ce que vous vous mentionner.

M. POULET: Je demanderais peut-être à mon VP d'opérations d'ajouter, mais je crois qu'ils sont là

pour deux ans.

MEMBRE HARVEY: L'essentiel de ma question, est-ce qu'il y a besoin d'avoir des employés de la Commission sur le site pendant une certaine période de temps?

M. POULET: Oui, absolument. Et je crois que la période que nous envisageons est deux ans et je pourrais laisser mon VP ajouter.

Donc on sait que le personnel de site de la CCSN sera là pour une période de deux ans environ.

MEMBRE HARVEY: Et vous mentionnez également qu'il y a un protocole qui a été signé. Est-ce que c'est le seul document ou la seule autorisation qu'Hydro-Québec a besoin dans les prochains mois?

M. POULET: Ce protocole n'est pas une autorisation. La Commission donne les autorisations. Le protocole vise à faciliter les échanges entre la gestion d'Hydro-Québec, qui va mener les manoeuvres pour passer de l'état opérationnel commercial à l'état de stockage sûr. Donc, c'est pour faciliter les échanges techniques. Ça prend quand même assez une flexibilité, une rapidité pour s'assurer que les réponses viennent vite et que les revues sont faites en temps.

MEMBRE HARVEY: Quel sera le rôle de la Commission en tant que telle dans la suite des choses?

LE PRÉSIDENT: Monsieur Jammal, pourriez-vous peut-être expliquer le processus global?

MR. JAMMAL: C'est Ramzi Jammal. C'est le protocole -- c'est de nature administrative, alors le protocole ne remplace pas l'autorisation de la Commission. Alors la commission a autorisé un permis d'exploitation, et puis comme tout le monde le sait, Hydro-Québec a décidé d'arrêter l'exploitation commerciale dès le 28 décembre.

Alors, le protocole, c'est plutôt pour donner un guide et pour éclaircir ou bien clarifier les attentes de la Commission et pour présenter un guide, un guide administratif pour que les deux organismes peuvent (sic) avoir l'information, pour qu'on puisse vous rendre une recommandation.

Alors maintenant, c'est l'arrêt (sic) a déjà pris place ; c'est l'arrêt de l'exploitation commerciale, et puis maintenant on vise le déclassement de la centrale selon le protocole administratif. Encore une fois, le protocole ne remplace pas la décision ni l'autorisation de la Commission, c'est juste là, plutôt une méthode de communication entre le personnel et Hydro-Québec.

MEMBER HARVEY: Ma question voulait aussi voir -- donc, il n'y aura pas d'intervention de la Commission dans la suite des choses ?

MR. JAMMAL: L'intervention ---

MEMBER HARVEY: À moins qu'il y ait un problème particulier ?

MR. JAMMAL: Exactement. Alors c'est, aussitôt que Hydro-Québec est toujours se trouve dedans leur “safety case” ou bien le cadre de sécurité tel qu'approuvé par la Commission. C'est -- ça -- on les considère comme des opérations normales.

Jusqu'à date, ils avaient un point d'arrêt dans le permis et dans le MCP, le Manuel condition de permis, qui indiquait qu'Hydro-Québec doit arrêter l'exploitation à la fin du mois de décembre pour déterminer deux choses : ou bien effectuer la réfection, ou bien arrêter pour un but de déclassement, alors ils ont décider de déclasser, et là, on se trouve maintenant dans une autre phase pour obtenir l'information qu'on a besoin pour -- on vous présente en 2014 un permis pour déclassement.

MEMBER HARVEY: Merci, ça va ; terminé.

THE CHAIRMAN: O.K. Merci beaucoup. Docteur Barriault.

MEMBER BARRIAULT: Merci Monsieur le Président.

On the issue of the lost time injury, LOPG that occurred with the excavation, what -- what’s our

function really in -- in managing the excavation or assuring us all of the safety of the excavation? Do we have protocols that we apply these -- I know that the labours on the department of different provinces have protocols, but do we supervise this at all? Do we have -- do we have a part to play in this?

DR. RZENTKOWSKI: The responsible authority for regulatory oversight of construction activities is the Ministry of Labour. Nevertheless, our inspectors exercise due diligence in this regard and observe those kinds of activities, but this happened in the evening, so there was no presence of our inspectors during the construction.

MEMBER BARRIAULT: But did the whole thing happen in the evening or -- I'm sure this is over in two or three days. Normally, they'll start excavating and put boxes in place for managing the ---

DR. RZENTKOWSKI: The incident per se happened in the evening. It was at 5 o'clock pm. I would like Mr. Francois Rinfret to provide more details. Thank you for the question.

MR. RINFRET: Francois Rinfret for the record. I would just simply like to add that this is not the typical activity that CNSC inspectors would witness in the field. We're talking about very conventional occupational and health activities happening outside the

normal nuclear island or even station area or island itself. So there -- there would not have been much interest in this.

The memo of understanding with MOL allows us to still be linked and to ensure that those -- the authority that has a responsibility over this type of event is -- is called in and will follow up on our behalf, but typically, not an activity that the inspectors would be ---

MEMBER BARRIAULT: It begs the question though, if they have responsibility for the protection and the health of their employees, then we should have responsibility to make sure it's being done, I would assume. What I'm hearing is that well, it's not really our problem, it's Ministry of Labour's problem and -- and I have difficulty in understanding this. Perhaps you could expand on that a little bit.

MR. JAMMAL: Sir, Ramzi Jammal for the record. I should have stayed in this chair. It's, Dr. Barriault, your -- your question is very valid. Just, let me explain two things. Even though the -- we have responsibility over all the site, this incident occurred outside the quote-unquote "licenced area", so way beyond the -- the licenced area.

What we're trying to present to you is,

yes, the CNSC has an overall role and we will take that -- we do take that seriously. The cooperation between us and the Ministry of Labour is a must, so in order to ensure there is no gap in any regulative oversight.

In this case, the event occurred at an area, even though we look after it, and, we will follow up, I will commit that to the Commission. But the Ministry of Labour is the more appropriate regulatory body to investigate and to -- to determine was there any issues relating to the occupational health and safety pertaining to that job.

So, your point is very valid. There is no -- the intent here between the collaboration of the CNSC staff and the Ministry of Labour is to ensure there are no gaps in the regulatory oversight and that's why we are relying on the Ministry of Labour and we -- we are in communication with them in order to make sure that there are no gaps in our regulatory oversight.

THE CHAIRMAN: Let me try to put it in a different way. We are -- the way I see, our responsibility is to make sure that all activities on that particular site is our responsibility, but we're going to make sure that the proper regulatory authority is dealing with it.

So, for example, in fish it's Fishery and

Oceans, we rely on Fishery and Oceans inspectors. In Environment, we're going to make sure that they abide by the other regulatory oversight. That's our responsibility.

MR. JAMMAL: Ramzi Jammal for the record. Thank you for this. I mean, I couldn't say it any better, exactly, so overall, we get reports to us and we make sure that all the other authorities have been informed and we work with the other authorities for follow up or any actions that needs to be done.

MEMBER BARRIAULT: I guess the concern I have really is -- is the Ministry of Labour really doing their function and if they're not, then obviously we have to assure ourselves that it's being done. Am I correct in assuming this?

MR. JAMMAL: Ramzi Jammal for the record. That's -- that's very true. That's very correct, I mean, I can't ---

MEMBER BARRIAULT: Okay, thank you. Next question is on the Point Lepreau, the unit that's now at 85 percent of full power, but I'm looking at the unit power as currently limited due to boiler chemistry issues. Do they know what this is and what's happening and is it being controlled?

DR. RZENTKOWSKI: Yes, New Brunswick Power

is fully aware of the problem they have to resolve and they are working on this for the past two to three weeks. So the power -- power is constantly increasing because the chemistry is improving, but they have to, of course, improve further to return to full power operation. Once again, I will ask Benoit Poulet to respond to this question in more detail.

THE CHAIRMAN: Thank you.

MR. POULET: Thank you. Ben Poulet for the record. It's not unusual, the -- the suspect impurity in sulphates, it's not unusual after a prolonged outage to have boiler chemistry problems on the secondary side. The -- there is international operating experience on -- on this topic and it shows that it's not unusual. The concentration is outside the optimum limits, but it's not exceedingly high. It's -- it's not a nuclear safety concern. It's more an operational issue and the measures as Dr. Rzentkowski mentioned, are being taken by NB Power Nuclear to remove these impurities over time and again to bring the unit back to full power operation.

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

THE CHAIRMAN: Thank you. Ms. Velshi?

MEMBER VELSHI: I've a quick question on Bruce Bay's event that's been reported on the leak of

diesel fuel. The second sentence there says “the leak was contained and there are no current safety or environmental implications”. When it says “current”, it implies that there could be future, but given that the leak is contained, is there an expectation or a probability of that happening?

DR. RZENTKOWSKI: Thank you for this question. As a matter of fact, by saying “current”, we refer to the current situation, and not to the future but to the past. There were certain environmental consequences, but nevertheless, very little oil leaked to the Lake Huron.

So the situation was contained very quickly and there was almost no environmental impact, but nevertheless there was a minor environmental impact. The lesson learned from this is that because those pipes are underground and, of course, cannot be inspected effectively, another modification or another design has to be put in place to avoid similar situation in the future.

And already a modification has been proposed by Bruce Powers to cover those pipes in concrete to avoid future leaks. This modification -- is being put in place as we speak.

THE CHAIRMAN: Thank you. Mr. Tolgyesi?

MEMBRE TOLGYESI: Merci Monsieur le

Président. Je retourne à Gentilly-2. Vous avez dit que le personnel de la Commission va être présent sur le site pour deux ans. Après, comment on s'assure -- parce que deux ans ce n'est pas nécessairement une période très longue dans un "decommissioning".

Alors quelle va être la présence et l'implication de la Commission par après?

M. RZENTKOWSKI: M. Benoit Poulet va répondre à cette question.

M. POULET: Benoit Poulet pour l'enregistrement. Suite à -- après la période de deux ans, tout le combustible qui est présentement dans le réacteur sera dans une -- dans une case à stockage sûre. C'est sûr -- c'est certain qu'il devra y avoir l'émission d'un permit par la Commission et les mesures de conformité, les exigences de la vérification que Hydro-Québec continue à rencontrer, les exigences de Commission sera (sic) fait, pas nécessairement par des gens qui travaillent ou sont situés au site à temps pleins, mais il y aura quand même des inspections qui seront faites par la personnel de la commission.

THE CHAIRMAN: M. Jammal?

M. JAMMAL: C'est M. Jammal ici pour l'enregistrement. Ta question, c'était concernant la capacité d'avoir une surveillance règlementaire à

Gentilly-2 quand ils vont être dans leur phase de déclassement.

Alors on a évalué les besoins de notre surveillance règlementaire, et puis si on a besoin d'avoir du personnel sur site, on va continuer de l'avoir, mais le plan qu'on a établi avec notre ressource humaine, c'est basé sur les activités règlementaires qu'on va surveiller.

Alors d'ici 2014, on - comme j'ai déjà mentionné - on va vous présenter une demande de déclassement. Et puis pour avoir une continuation de surveillance règlementaire, on a déjà vérifié qu'on peut servir et continuer à avoir une surveillance règlementaire d'ici, du bureau du siège social d'Ottawa.

Mais on -- c'est toujours -- on révise le besoin. On révise nos besoins de surveillance règlementaire et si on a besoin d'avoir quelqu'un sur site (sic), on va le faire.

MEMBER TOLGYESI: Est-ce que -- vous avez parlé de protocoles d'entente, parce qu'il y a Gentilly-1 aussi là. Est-ce qu'il y a quelque chose qui -- parce qu'il y en a plus de -- il y aura plus de Gentilly-2 non plus donc il y en a peut-être (sic) un démantèlement total. Est-ce que c'est considéré?

M. JAMMAL: M. Jammal pour l'enregistrement. Oui, Gentilly-1 c'est -- le détenteur

de permis c'est EACL, tandis que le détenteur de permis c'est Hydro Québec pour Gentilly-2.

Sans doute, on a déjà, nous autres-là, le personnel de la Commission, a suggéré que la communication entre EACL et Hydro-Québec amorce pour que les deux puissent travailler ensemble pour avoir un déclassement au site au complet.

C'est toujours une discussion. Je pense qu'EACL et Hydro-Québec vont amorcer d'ici deux mois pour qu'on puisse coordonner les deux.

MEMBER TOLGYESI: And my question is about this fire at Pickering that -- it happened when the unit was offline and shut down for planned maintenance and a spokesman for OPG was saying that it's rare that this would happen, adding that it's good news that unit was offline at that time.

So what's the potential risk or danger if it was not offline? Could it happen and what's the potential consequence?

MR. RZENTKOWSKI: Greg Rzentkowski for the record. This fire took place on the secondary side of the reactor so there were no risks to the operation of the reactors directly.

Nevertheless, always, a fire creates a risk to the personnel and definitely during the normal

operation, there could be personnel present in the secondary site, eventually posing a risk to the safety of the workers.

MEMBER TOLGYESI: Dr. McDill, all good?

I have just a quick question on Pickering B, on the steam leak. You state that this report completes CNSC staff notification to the Commission. I thought you normally gonna do root cause analysis and present, so where is the root cause here?

MR. RZENTKOWSKI: For the events which are more important from the safety significance standpoint, we follow-up on root cause and corrective measures which the licensees are prepared to put in place.

In this particular case, it was a low significance event. It was just a leaking gasket through which the steam escaped to the turbine hull, but it’s really of low safety significance and that’s why we decided that there is no reason to follow up and report again to the Commission.

On the remaining events which are reported in the status report, we will follow-up and we will provide further updates to the commission because they were definitely more risk significant.

THE CHAIRMAN: Okay so that’s, you know, it wasn’t clear as to what the follow-up would be.

MR. RZENTKOWSKI: Okay, so yes we have to establish some criteria for follow-up reporting, but we wanted to be clear in the status report and indicate those events on which we will follow-up in the future.

THE CHAIRMAN: Okay. Thank you. Anything else on this one? Okay. Thank you.

I understand there are no further event initial reports, so we will move on to the next item on the agenda which is the “Safety Performance Report on Nuclear Substances in Canada”.

This is outlined in CMD 13-M6 and I understand that M. André Régimbald will make this presentation once he is setup. We’ll give you a minute to organize.

5. Information Item

5.1 Nuclear Substances in Canada :
A Safety Performance Report
For 2011

13-M6
Oral presentation by
CNSC staff

M. RÉGIMBALD: Alors bonjour Monsieur le Président et Membres de la Commission. En attendant que la présentation soit installée sur le moniteur, je peux commencer par introduire le sujet.

Je m'appelle André Régimbald. Je suis le Directeur Général responsable de la règlementation des substances nucléaires.

Nous vous présentons aujourd'hui le "Rapport sur le rendement en matière de sûreté des usagers de substances nucléaires, d'équipement règlementés et d'installations nucléaires de catégorie 2 au Canada pour l'année 2011".

Nous sommes très fiers de vous présenter ce rapport qui constitue en fait le troisième rapport de sûreté produit jusqu'à maintenant par la CCSN, le précédent rapport vous ayant été présenté en Novembre -- pardon, en Décembre 2011.

Production of this safety performance report continues to be an outstanding achievement for the Canadian Nuclear Safety Commission as we are still the first nuclear regulator in the world to be producing such comprehensive reports on the safety performance of nuclear substance and equipment users in industrial, medical, commercial and research and academic settings.

Following the presentation today, our

intent is to have the report published on the CNSC external Web site in March of 2013.

Alors, pour la présentation du rapport, je suis en compagnie de Mme Isabelle Tremblay, Agente de programme dans la Division des Autorisations de Transport et du Soutient Stratégique.

Mr. Peter Fundarek, Director of Nuclear Substance and Radiation Device Licensing.

Mme Jacinthe Plante, Directrice par Intérim de la Division des installations de catégorie II et des accélérateurs.

Mr. Henry Rabski, Director of Operations inspection.

M. Sylvain Faille, Directeur des autorisations de transport et du soutien stratégique, ainsi que d’autres membres du personnel de la direction qui ont contribué à la direction du rapport.

Nous avons également du personnel des bureaux régionaux avec nous aujourd'hui.

Alors je passe la parole à Mme Tremblay, qui fera la présentation en anglais.

MS. ISABELLE TREMBLAY: Isabelle Tremblay.

This presentation will provide you with a brief overview of the changes we made to the report from the previous edition and of the metrics used to report on

the safety performance. Then I will go over the results which are summarized here on this slide.

There were more -- this is not the right slide. There were more than 1,600 inspections performed in 2011 and the CNSC staff outreach to the licensed community via meetings with industrial radiography licensees, outreach events about general licensing issues and three editions of the DNSR newsletter.

Occupational doses were low, essentially at par with those reported in 2010. It's slide two.

MR. RÉGIMBALD: Bear with me for a second. There.

MS. ISABELLE TREMBLAY: All right.

THE CHAIRMAN: Okay.

MS. ISABELLE TREMBLAY: All right. Thank you. All of the workers included in the report received doses within their regulatory limits with the exception of two non-nuclear energy workers who received doses in excess of the regulatory limit for members of the public. More details will follow later.

We noticed good compliance performance from licensees over the reporting period with an improvement relative to 2010 and there was an increase in the number of reported events as well as an increase in the number of issued orders, namely in the industrial sector. Over all,

licensees offered a good safety performance.

Now regarding the structure of the report, there were a few changes made from the previous edition. For consistency with other licensee performance reports, the four level compliance rating system was used for reporting purposes. A satisfactory rating means that the licensee is meeting the CNSC requirements for the specific performance metric.

We have included some new sub-sectors in order to highlight different areas of the industry. These are the veterinary nuclear medicine in the medical sector, the oil well logging in the industrial sector, the research irradiators in the academic and research sector, and the processing of nuclear substances in the commercial sector.

The next slide will summarize the performance measures used for this industrial report. Slide four. The performance measures are the readings obtained from CNSC inspections for operating performance, radiation protection and the tracking of high risk sealed sources. We also report on occupational doses which are extracted from the annual compliance reports submitted by licensees throughout the year.

In addition, we cover the reported events and incidents, as well as significant enforcement

activities in the form of orders and decertification of exposure device operators. These are all posted on the CNSC Web site.

The next slides will present the results for each of the four sectors. I will begin with the compliance performance of the medical sector licensees. On this slide, you can see pictures of typical uses in this sector, such as equine nuclear medicine imaging and the Thyroid Uptake Probe used following the administration of iodine 131.

Here are the occupational doses for medical sector licensees. The annual whole body dose information was extracted from annual compliance reports submitted by licensees. For the purpose of this metric, a representative sample of randomly selected compliance reports was analysed by staff. This resulted in dose data from about 3,600 workers in 2011.

Nearly 90 percent of sampled workers in this sector received a dose of less than 0.5 millisievert per year, a number relatively consistent with the previous reporting years. One non-nuclear energy worker involved in diagnostic nuclear medicine exceeded the dose limits set at 1 millisievert per year. The employee received 1.1 millisievert in 2011. CNSC staff made sure that the licensee implemented appropriate corrective actions.

And we move on to inspection rating results. The medical sector is generally compliant with respect to operating performance, with a slight improvement from the 2010 results. In fact, 86 percent of inspected licensees were found to be compliant in 2011, an increase of 3 percent with respect to 2010.

A similar trend is shown here with radiation protection inspection ratings improving over the reporting period. The percentage of satisfactory rated inspections has been constantly going up from 57 percent in 2008 to 72 percent in 2011.

And next are the sealed source tracking inspection rating results for the medical sector. Results are based on fewer inspections. Only licensees using high risk category sealed sources are subject to mandatory reporting. In 2011, all of the inspected licensees were found to be compliant.

Now this slide presents the number of reported events and incidents in the medical sector. There was a slight increase in 2011, compared to 2010, and the increase was distributed amongst different types of events including three instances of missing nuclear substances, but all of them involving low risk sources.

And there were no orders issued to the medical sector in 2011, so the next slide will summarize

results for this sector now. In summary, occupational doses were well within regulatory limits and consistent with previous reporting years. With respect to inspection ratings, this sector was generally compliant with a slight improvement from previous years.

There was a small increase in reported events and there were no orders issued in 2011. So we can state that the use of nuclear substances in the medical sector is safe. This ends the presentation for the medical sector.

Next will be the industrial sector results review. On this slide you can see an example of the use of nuclear substances in analysing the geological composition of bore holes referred to in the report as the oil well logging subsector.

A sealed source is transported onsite and lowered into the hole to collect data that will help determine the geological formation characteristics. The doses in the industrial sector were approximately at the same level for each of the four years covered by this report and significantly less than the regulatory limit for NEWs. In 2011, 94 percent of the industrial sector workers received less than 1 millisievert per year, which is the limit for members of the public.

This slide shows the operating performance

inspection ratings in the industrial sector. Industrial sector licensees slightly improved their compliance level with 86 percent of licensees found to be compliant in 2011, up from 81 percent in 2009 and 2010. Similarly, the compliance performance for radiation protection has also improved, going from 78 percent in 2010, to 87 percent in 2011, while the percentage of inspected licensees found to be unacceptable went down from 7 percent in 2010, to 4 percent in 2011.

And here are the inspection ratings for sealed source tracking, with 97 percent of inspected licensees found to be compliant in 2011, an increase from 88 percent in 2010.

This slide presents the reported events and incidents in the industrial sector. Of all sectors, the industrial ones continues to have the highest number of reported events, but it is proportional to the fact that this sector represents more than half of the license covered by this report. There was an increase in the number of events in 2011, as compared to 2010. This is mostly due to a rise in the number of reported events involving portable gauges, hit or run over by vehicles on construction sites, as show on these two pictures.

However, we noticed a decrease in the number of reported crushed gauges in 2012 and this may be

as a result of the publication of a special edition of the DNSR newsletter in July, 2011 and more CNSC field inspections being conducted.

There were 13 events related to missing nuclear substances. Six of them involved the recovery of previously lost or stolen substances. In three of the seven remaining events, the nuclear substances were recovered shortly after being reported, and the other four events are under investigation, with all of them involving low risk sources.

There were 13 orders issued to the industrial sector in 2011, partly due to an increase in the number of field inspections being conducted. The breakdown of orders by activity type is provided here. There were six orders issued to portable gauge licensees, six to industrial radiography licensees, and one to an oil well logging licensee. The CNSC ensured compliance with all orders and to this date only one is still in effect. There were no exposure device operators decertified by the CNSC in 2011.

This is the last slide pertaining to the industrial sector. In summary, occupational doses were similar to those of other sectors. With respect to inspection ratings, the industrial sector was generally compliant with a notable improvement in radiation

protection compliance.

There was an increase in reported events as compared to 2010, mainly due to an increase in reported events involving portable gauges. The number of orders has also increased partly due to an increased number of field inspections conducted by CNSC inspectors. The use of nuclear substances in the industrial sector remains safe. This concludes the overview of the sector.

Following are the results for the academic and research sector. The pictures here show examples of uses in this sector. Radioisotopes are used in lab environments, such as the one shown here. The other picture was taken at TRIUMF, a high-energy research particle accelerator located in Vancouver.

These are the occupational doses in the academic and research sector. In 2011, 97 of the workers in this sector received less than the public dose limit of one millisievert per year, and all NEW received less than 5 millisieverts per year. One worker who should have been designated as a NEW received an annual whole body dose of 2 millisieverts. The employee was subsequently designated as a NEW and returned to work.

Next are the operating performance inspection ratings for the academic and research sector. In 2011, 84 percent of the inspected licensees were found

to be compliant, essentially unchanged from the previous year. Now, with respect to radiation protection inspection ratings, they also remained stable with 78 percent of licensees found to be compliant in 2011.

In 2011 all of the inspected licensees were found to be compliant for the sealed source tracking system requirements. Now, these are the reported events and incidents in the academic and research sector. The 2001 are shown in purple. There were very few reported incidents in this sector, similar to previous reporting years.

In 2011, there was one order issued to a university located in Newfoundland. During an inspection, the inspector found that the licensee was not compliant with the requirements of the radiation protection program and had systemic causes of non-compliances revealed during previous inspections. The licensee implemented corrective measures to the satisfaction of the CNSC and the order was then closed.

Now, moving on with the summary results for the academic and research sector.

In summary, the occupational doses received by workers were among the lowest of all sectors. The compliance performance has remained stable in 2011 when compared to 2010. There were very few reported events and

incidents, and there was one order issued to a licensee in this sector. With this we can conclude that the use of nuclear substances in the academic and research sector is safe.

And I will now present the results for the last sector, the commercial one. The picture here shows an employee handling nuclear substances in a hot cell at a processing facility. Occupational doses in the commercial sector are slightly higher than in other sectors, but still within regulatory limits and stable over the last four years.

The operating performance inspection ratings remain constant in 2011 when compared to 2010, at 93 percent. And again, for the radiation protection, inspection ratings were fairly the same as in 2010, with 91 percent of inspected licensees found to be compliant.

With respect to sealed source tracking requirements, 92 percent of inspected licensees were found to be compliant in 2011. The non-compliance was related to a licensee who did not file their sealed source tracking notification within the period required by the licence. The database now reflects the transaction.

There was a notable decrease in the number of reported events for the commercial sector. The decrease was more noticeable in the area of spills and

contamination, likely due to measures implemented by licensees. And there were no orders issued to licensees in the commercial sector in 2011.

Now, to summarize the results for the sector, occupational doses have remained stable over the past four years, without any workers exceeding regulatory limits in 2011. Likewise, compliance performance has been fairly constant. There was a decrease in the number of reported events, and no orders were issued to a commercial sector licensee in 2011. With this, we can conclude that the use of nuclear substances in the commercial sector is safe.

In general, there were -- now the concluding remarks. In general, there were positive gains in compliance in 2011, with all sectors improving their compliance with respect to operating performance, and three out of four sectors improving in radiation protection compliance.

Occupational doses were well within regulatory limits, with the exception of two non-nuclear energy workers who exceeded their one millisievert limit. The CNSC ensured that proper corrective measures were implemented by the licensees in question. The majority of workers received less than the public dose limit and this performance metric has essentially remained stable when

compared to 2010.

There was an increase in the number of reported events, namely in the industrial sector. Still, none of the reported events resulted in doses in excess of regulatory limits. The number of orders has increased in 2011, more specifically in the industrial sector, and there were no orders issued to the medical and the commercial sectors.

The CNSC continues to take proactive measure to reach out to licensees with the bi-annual publication of the DNSR newsletter, the Industrial Radiography Working Group, as well as various outreach activities. The Directorate of Nuclear Substance Regulation intends to publish this report in both official languages. It will then be posted on the CNSC's internal and external websites.

And this concludes my presentation. Thank you for your attention. We are now ready to take any questions from the Commission Members.

THE CHAIRMAN: Thank you.

Well, let's start with Ms. Velshi.

MEMBER VELSHI: Thank you, Mr. President.

I'd like to start off by complimenting you for this report. I found it to be very informative and a very interesting read. So thank you for that.

Some comment first. You mention about all doses being within regulatory limits, but then there is this exception of two non-nuclear energy workers. So is the dose limit for the non-NEW the public dose limit? And if it is then you really didn't get 100 percent compliance with being within regulatory limit.

MR. RÉGIMBALD: André Régimbald.

You're right, there were two instances where workers deemed to be non-nuclear energy workers at the time did get doses above the public dose limit of one millisievert. In one case it was 1.1 and the other was 2. There was a review by the licensee -- this was reported to the CNSC. There was a review by the licensee who conducted an investigation into the matter, and it was determined that the workers should have been designated as nuclear energy workers after the investigation.

Isabelle, est-ce que tu veux ---

MS. TREMBLAY: When we say that the regulatory limits were not exceeded, when we say that it's for a specific sector.

So in the case of the medical and the academic and research it's with the exception of these two workers.

MEMBER VELSHI: I mean, this is an important point because one doesn't want regulatory limits

to ever be exceeded. Your concluding remark applies to all the sectors, which says, “well within regulatory limits.” So it doesn’t -- you know, it doesn’t distinguish the medical sector. But had these two workers not, after the events, been deemed to have you know -- they really should have been NEWs. Will this be handled differently?

I’m just questioning, is there a need for an asterisk? Because, you know, in the oral presentation you’ve highlighted this. In the report I actually had to look quite closely to where there was this exceedance of limit. But it’s a big enough issue, I think, that it needs to be clarified.

MR. RÉGIMBALD: When there is a report by a licensee that a member of the public or a worker that is not designated a nuclear energy worker, and after the investigation is still not a nuclear energy worker, this is taken seriously by the CNSC. And it is an event that we normally report to the Commission and it is dealt with very specifically from then on.

MEMBER VELSHI: Okay. So here it was, they really should have been nuclear energy workers.

MR. RÉGIMBALD: Exactly.

MEMBER VELSHI: Which leads me to my second question. How is the dose to the non-nuclear energy

workers measured? Is there -- are they given dosimeters, or is there an area monitoring that determines that?

MR. RÉGIMBALD: Peter Fundarek will answer the question.

MR. FUNDAREK: The regulations allow for a variety of methods to be used for monitoring of the doses to non-nuclear energy workers. And that can include dose estimations, which is typically used for portable gauges; area estimations, which is typically used for fixed gauges; and specific monitoring, which is used for some of the other areas depending on the applications.

MEMBER VELSHI: Okay. So it's a combination. And these would have been dose estimates. This one -- perhaps the 1.1 and the 2 millisieverts.

MR. FUNDAREK: That's correct. They're not required to wear TLDs if they're below the 5 millisieverts per year. And so most of the -- well, all of the people for below the public limit or the dose for any other person would not be required to wear a dosimeter.

So for the most part those would have been estimated doses. But there is still the option that some licensees will ask their staff to wear dosimeters just for their own policy and procedures.

MEMBER VELSHI: Thank you.

What's the difference between an event and

an incident? I know the difference between an incident and an accident. But what's one between an event and an incident?

MR. RÉGIMBALD: For us, they are treated the same. We have to react. We have to take action and have the licensee investigate, and ourselves, and determine corrective actions.

MEMBER VELSHI: So really there's no difference between the terminologies. It's just what -- now I know that this sector makes up for 90 percent or so of the licensees issued by the CNSC. As far as nuclear energy workers, what percentage of nuclear energy workers in Canada would fall within this particular sector?

MR. RÉGIMBALD: You're talking about the medical? I'm sorry.

MEMBER VELSHI: All the sectors that you have reported as compared to nuclear power plants and mines and refined...

MR. RÉGIMBALD: We don't have this information at hand but we can provide it.

MEMBER VELSHI: Okay.

I have a number of questions but I'll ask one and then wait for the second round.

And if we turn to Slide Number 7, the Operating Performance Inspection Ratings, and I was trying

to -- trying to compare this particular report to the previous ones we have received, whether it's for the power plants or for the mines, where they have safety control areas and, you know, do they meet or don't meet, and to see what the parallel is because where I see below requirements and unacceptable year over year.

I mean, is this a cultural issue where being below requirements is acceptable? Or, really, we're not comparing it to what we would see as not being compliant with a safety and control area in the other sectors?

MR. RÉGIMBALD: The graph -- the graph shows that 80 percent of the -- of the inspected licensees were found to be compliant. Below requirements ratings indicate some program deficiencies that perhaps I would ask Mr. Rabski to elaborate on the differences in the rating. But this is -- this shows when the inspection is conducted at the time. It shows where the non-compliances are. And all -- and then the licensee has to correct them to bring -- to bring the licensee back into compliance. But Mr. Rabski can explain, you know, the difference between the ratings.

MEMBER VELSHI: Maybe before he answers that, maybe I didn't ask my question properly.

But if we had -- if we had used this as a

safety and control area operating performance and the rating is based on the inspections, would this graph be seen as satisfactory or meeting requirements? That, yes, there'll be times when you do inspections that they may not have 100 percent compliance, but, overall, we're satisfied with this?

I'm asking is this an acceptable depiction of what we would be happy with?

MR. RABSKI: Henry Rabski, for the record.

Obviously we strive for compliance to all the regulations -- 100 percent compliance. Are we satisfied? No.

Eighty (80) percent is -- we're showing trending that we're improving compliance. This is one safety area that -- that has been drawn into our annual report because it is measured across all our licences, all our sectors and is a good representation of what's happening. But we are working towards total regulatory compliance, and we're not satisfied and we work with licensees to improve that. The information that we provide to the licensee clearly, as our inspection reports outline the deficiencies and we discuss with them actions that need to be taken to correct them.

So it's a continuous process. We're working with licensees to increase that compliance to the

direction of 100 percent.

MEMBER VELSHI: Thank you.

I'll wait for the second round for my other questions.

MEMBER BARRIAULT: Thanks, Mr. Chairman.

On Slide 20 what is said really is that if you increase inspections, you increase orders. Does that mean that if you could increase inspections even more you'd have more orders to issue?

I guess what I'm -- the question -- it begs the question, what is it that we're missing, really, that when you increase the inspection, you increase the number of orders?

MR. RABSKI: Henry Rabski, for the record. The -- I guess the observation made by the report is saying that by increasing field inspections and actually inspecting how nuclear substances and nuclear devices are being used and operated, we are finding more -- we are issuing more orders. And that's because we're actually getting out in the field and increasing our field presence and our observation.

So that's equating into actual instances when -- when a licensee or their staff or nuclear energy workers are not respecting the requirements, and where there is a health and safety issue, we issue an order.

MEMBER BARRIAULT: Are you comfortable that you're doing enough inspections?

I guess -- have we reached the optimum point in inspections? Because what I'm hearing is that the more inspections we do, the more orders we issue.

Am I correct in assuming this?

MR. RABSKI: Not the -- not necessarily. I would say the more field work we do there is a higher probability that we will find orders or situations where there may be a safety or health and safety issue.

Working with licensees and providing outreach, talking about non-compliances, clarification of expectations will also lower that down.

So it's a curve that we can influence by our observations and turning that into some positive outreach in terms of addressing non-compliances. So, for example, in the case of portable gauges where we find a lot of -- a number of non-compliances, we put a plan in, not only just to do fieldwork and identifying non-compliances, but proactively through our outreach, to discuss good practices, reinforce the requirements, clarify our expectations, and work with licensees to get it right, to protect their workers, and also to respect the requirements.

So it's a two-way street. Not everybody

takes that message and it's a work-in-progress and the licensees have a commitment also to instill that kind of safety approach and respect for nuclear substances in their organizations if they want to see improved compliance.

MEMBER BARRIAULT: Okay. So I guess what I'm hearing is that you've got two functions, one on inspections, the other one is education. But on the inspection side of it, is it because they're not answering to the needs of the education that you're giving them? You're telling them what to do, how to do it, but they don't do it, and then the next step is to order -- I guess I'm not clear on this issue. I guess what I'm hearing here is that the more higher patrol you have, the more speed you pick up. And I agree.

THE CHAIRMAN: Okay. Mr. Jammal, I think you jumped -- you want to say something about this, and then, Mr. Régimbald?

MR. JAMMAL: Thank you, Mr. Chair.

It's -- Dr. Barriault, you're asking the question is: Are we doing enough inspections and after the inspections, what do we do? I'd just like to describe to you the process, if I may.

We have all our site inspectors and coordinators here, so we'll pass on to them the

discussions.

The principle of -- as you know, we go on the principle of trust but verify. Each inspection and the coordinators and the inspection process at the CNSC is risk-informed. So in order to look at the risk category of the licensee, as one first cut, then we look at the performance of the licensee.

As it was mentioned in the report, the staff look annual at the Compliance Report to look at the verifications in the field. Then, usually, we inspect -- depending on risk, we establish the frequency on when we inspect those licensees.

If they have repeated non-compliance events, then staff determines in the field, do they need to issue an order or not? If it's an immediate health and safety issue, it's a sudden death. That means you pull the licenses, as we came before you at times in the Commission where improper storage of devices that caused unnecessary or improper shielding in place.

So the answer is, the coordinators, the plans for inspection is done yearly and reviewed quarterly and, based on promise of licensees, the orders are issued. So there is an established criteria by which the inspectors will issue the order.

In addition, the CNSC, hence the DNSR, has

published our inspections, verification criteria used by our inspector for the licensee to use as self-assessment. So there is a lot of indicators in place for the performance of the licensee: Past history, programs approval, the licensee's self-assessment, and the (inaudible) report, and then we determine what needs to be done.

I hope I answered the question, but this is what triggers the order; it’s past performance or immediate health and safety issues.

MEMBER BARRIAULT: I guess it begs the question, do you have enough in staff to do the inspections that are required or you're still struggling to get on top of this thing and to reach the ultimate level with the inspections versus orders?

MR. JAMMAL: If you allow me, we can always ask for more staff, but it's -- do we have the necessary resources in order to ensure safety to Canadians? The answer is yes, we do.

And as a matter of principle -- not just principle, our practice -- we review the performance of the industry and the sector itself. And now, again, our coordinators are here. We've done blitzes where we moved our allocated resources from other regional offices to support -- For example, in the Calgary office in the west

was the majority of radiography activity is taking place, we do send inspectors in order to support and assist to ensure that we all have a proper indicator of what the industry is doing.

Thank you.

MEMBER BARRIAULT: Would Mr. Régimbald -- would like to comment?

MR. RÉGIMBALD: Oui. Je voulais ajouter que les inspecteurs sont, comme Monsieur Jammal a dit, nous avons des inspecteurs ici à Ottawa et dans les régions. Nous avons optimisé les ressources pour inspecter les installations à haut risque, parce qu'il y a à peu près 5000 locations qu'on pourrait inspecter, mais avec les ressources qu'on a, on en fait à peu près 1600 par année et on vise les activités à hauts risques.

Et aussi, si vous regardez dans les résultats, les résultats sont positifs parce qu'ils indiquent que plus de 85, 90 pour cent sont satisfaisants. Donc, ça, ça nous donne une bonne assurance que les titulaires, en général, sont conformes avec les règlements et aussi avec la combinaison de d'autres mécanismes, par exemple les rapports d'évènements, les rapports annuels de conformité, l'information qu'on pourrait avoir qui pourrait nécessiter une inspection surprise par exemple, les blitz qu'on fait ---

MEMBER BARRIAULT: Oui.

MR. RÉGIMBALD: Donc, on a optimisé les ressources de cette façon-là, mais -- et aussi, je pense pas qu'il est nécessaire d'inspecter toutes les 5000 parce qu'il y a beaucoup d'usagers qui sont des faibles risques. Donc, l'usage des ressources ne serait pas vraiment justifié. Alors, on essaie d'avoir une bonne optimisation des ressources pour -- justement pour cibler les installations qui sont à plus hauts risques.

MEMBER BARRIAULT: Merci. Je voudrais vous féliciter sur votre rapport. C'est un bon rapport, merci.

MR. RÉGIMBALD: Merci beaucoup.

MEMBER BARRIAULT: That's all for this round, sir.

MEMBER HARVEY: Merci, Monsieur le Président.

Je me joins à mes autres collègues pour vous féliciter pour le rapport. Très intéressant.

Ma première question: y'a trois graphiques, trois figures, qui présentent le même pattern, puis j'essaie de trouver une explication et j'ai pas le one-one peut-être dans ça, mais je trouve pas l'explication.

Page 22 -- page 22, 30, et, un peu plus en avant, c'est page 6. Sur ces trois graphiques, on voit

qu'il y a toujours, évidemment, un grand nombre de personnes avec des doses très faibles -- très faibles: entre 0.5 et 1. Y'en a peu et ça remonte toujours entre 1 et 5. Et sur les trois graphiques, c'est le même pattern qui arrive puis -- est-ce qu'il y a une explication ou -- comment vous pouvez expliquer ça?

Mme TREMBLAY: Isabelle Tremblay.

C'est que ces graphiques-là, dans le rapport, on va dans le détail pour montrer les “new” et les “non-new”, mais ça, c'est le graphique où on combine les deux types de travailleurs.

Alors, une explication probable, c'est que quand on combine la population de “new” et de “non-new”, alors tous les “non-new” sont dans la case en bas de .5, et puis là où la part des “new” arrive, c'est là qu'on a entre 1 et 5 -- la population entre 1 et 5.

MEMBER HARVEY: En tout cas, y'aurait peut-être quelque chose à faire parce que c'est un peu embêtant de voir ça. On essaie de s'expliquer. Habituellement, on s'attendrait à une courbe normale.

Mme TREMBLAY: C'est pour ça que dans le rapport, on va dans le détail, mais à la présentation, pour faire une présentation plus sommaire, on présente juste le total.

MEMBER HARVEY: Bien souvent, on s'attache

beaucoup aux figures, hein?

M. RÉGIMBALD: C'est -- Oui, c'est -- on aurait pu présenter, par exemple, à la page 22 -- ça va pour les autres pages aussi -- on aurait pu présenter deux graphiques: un graphique seulement pour les travailleurs du secteur public ou qui sont pas désignés travailleurs du secteur nucléaire, puis un autre graphique seulement pour les travailleurs du secteur nucléaire.

Alors qu'ici on a choisi de mettre toute l'information sur un même graphique. Donc, c'est pour ça qu'on peut pas faire une analyse avec les...

MEMBER HARVEY: C'est plus difficile. Oui, y'aurait peut-être une amelioration à faire.

MR. RÉGIMBALD: Du point de vue visuel, on pourrait peut-être améliorer la clarté de l'information pour les rapports subséquents, pour les présentations subséquentes.

MEMBER HARVEY: Peut-être.

MR. RÉGIMBALD: OK.

MEMBER HARVEY: Page 3, vous mentionnez: “However, because this reporting period starts on January 1st...”; what reporting period? Parce qu'on a -- on a quand même des données sur quatre ans et vous mentionnez ici que le -- il sera pas possible de faire un rapport sur les cinq années parce que ça commence le 1er janvier 2011.

MR. RÉGIMBALD: I would like to ask Caroline Purvis, Director of Radiation Protection to provide the answer.

MEMBER HARVEY: Cette période de cinq ans, moi, je croyais qu'elle était mobile? C'est que ---

MS. PURVIS: Caroline Purvis, Director of the Radiation Protection Division.

Je voudrais répondre en anglais, s'il vous plait.

MEMBER HARVEY: Ça va.

MS. PURVIS: So this statement applies to the five-year limit as well for nuclear energy workers of 100 millisieverts over a five-year period, as well as, of course, the annual dose limit of 50 millisieverts.

According to the Radiation Protection Regulations, that period is a fixed period. It came into force the year after the Regulations came into force so, in other words, it’s a fixed five-year period. The Regulations came into force in 2000, and the fixed five-year period began in January of 2001.

So every consecutive five-year period thereafter is the fixed five-year period and the dose limit is 100 millisieverts.

MEMBER HARVEY: But is it strange to have a fixed period like this because it could be very different

if you -- if that five years was a moving five years.

MS. PURVIS: M'hm. Well, certainly when the Regulations were drafted as they currently exist now that was an issue which was discussed extensively. In the end it was determined that the fixed period really was much easier administratively to implement, and from a health point of view, there was really no benefit to having a rolling five-year because the dose limits are based on a lifetime exposure, the preference was at the time -- and it was consistent with international guidance -- that the fixed-year period was acceptable and, as I said, easier to administrate and to implement for licensees.

THE CHAIRMAN: Well, I understand that the Regulations are being reviewed. It doesn't make sense, no matter what you say, and I'm stunned when I heard about this because you can play games; you can wipe your slate so after five years you're back to zero? It does not make health sense, and if that's the way Health Canada has read this thing and the dose, we've got some issues that we're going to need to discuss when we revise this. I understand that Patsy is here going to defend what doesn't make sense, so go for it.

DR. THOMPSON: Patsy Thompson, for the record.

So my intent wasn't to defend -- I'm not going to go on my deathbed on this, but more seriously you know that we've started a process to review our Radiation Protection Regulations. We have drafted a discussion paper that has undergone internal review and will be issued for public review probably in March or April, and this is one of the considerations that were the subject to internal review. And based on the Commission's comments, we will revisit the approach we have in the discussion paper for that topic.

THE CHAIRMAN: But is it really true that it is an international practice?

MS. PURVIS: Yes, it is true. Caroline Purvis, for the record.

The IAEA international BSS, or the basic safety standards, upon which all countries tyically base their regulations use the same appraoch. It was recently revised in 2011 and they continued to use the same approach which essentially was the coming into force of the Regulations in the year after on a fixed five-year period.

THE CHAIRMAN: So it means after five years, if I got my limit of 100 as a worker, the fixed -- so the next starts and I'm back to zero. So the next year I can get 20 and I'm above 100, if you look at it two

years kind of together, and it's okay?

MS. PURVIS: Caroline Purvis, for the record.

We have to remember there are annual dose limits for all workers, nuclear energy workers as well as other workers that are not considered as NEWs. So there is, of course, the annual limit of 50 millisieverts and then, for all intents and purposes, there is that 100 millisieverts over five years; essentially, 20 millisieverts a year.

Licensees typically develop their radiation protection programs to, obviously, optimize worker doses; that is, to keep them ALARA. They're very, very low -- there's a very low percentage of licensees that approach 20 millisieverts a year. In principle what you're proposing is true; at the end of the five-year period they do come back to zero, but there are program requirements such as action levels that optimize worker doses.

THE CHAIRMAN: I'm looking forward to the discussion on the new Regulations.

Monsieur Harvey?

MEMBER HARVEY: You mentioned it and I know we saw it on the slide that the medical sector is -- performance is lower than the other ones, and what is done to increase the performance of that sector? Do you do

more -- well, more inspections, more prevention in that sector (inaudible) we see that that sector has a lower performance than the other ones, even the -- if they are increasing the performance, it's slower. So ---

MS. PLANTE: Jacinthe Plante, for the record.

We have an inspection rating of high risk every one or two, three years. So we try to resolve the sector of the medical for the radiotherapy for every three years. Usually the performance that we see are in the good stages. The one that was represented in the report is effectively non-compliance that are minor non-compliance so that decreased the performance in that sectors, they were some administrative non-compliance, for example, posting or not a durable sign. So we try to increase our scope of inspection; we don't increase the number of inspection.

MEMBER HARVEY: Would you say that despite the fact that the performance is lower than the other sector, that the problem is not ---

MS. PLANTE: The licensee ---

MEMBER HARVEY: --- most important?

MS. PLANTE: The licensee of a good compliance program, I mean, that when we issue compliance/non-compliance to the licensee, they -- how can

I say it, they -- je vais parler en français, excusez-moi.

Les titulaires de permis répondent d'une façon satisfaisante à leur non conformité avec un délai très court. Ils se retournent très vite en conformité avec leur non-conformité.

MEMBRE HARVEY: Mais le fait que ce secteur est moins performant, est-ce qu'au point de vue de la sécurité ou la santé du public, le problème est plus grand ou ---

Mme PLANTE: Non, en effet, le problème n'est pas plus grand. C'est surtout des non conformités mineures qui sont surtout administratives qui sont trouvées.

Le fait qu'on ait un nombre très petit de vérifications par année, par exemple, en 2011, pour la radio-oncologie, il y avait eu huit inspections. Donc, huit inspections c'est un petit nombre sur le nombre total de tout ce secteur-là. Donc, les non conformités sont mineures, sont surtout administratives et sont vite répondues en conformité, une bonne réponse au titulaire.

MEMBRE HARVEY: Merci.

M. RÉGIMBALD: Juste un complément d'information, Monsieur Harvey. Pour le reste, Madame Plante a parlé du secteur de l'oncologie, mais en tout, pour le secteur médical de la médecine nucléaire, on a

effetué 264 inspections au cours de l'année 2011 et le graphique indique tout de même une augmentation du rendement de conformité.

Et puis aussi, je voulais juste ajouter qu'il y a eu trois cas où on a dû intervenir un peu plus sévèrement avec des titulaires de permis qui étaient des hôpitaux, des universités, parce qu'ils affichaient un taux -- un rendement de conformité qui n'était pas acceptable du tout.

Donc on a pris des mesures assez sévères à leur égard et ils ont répondu très rapidement et très efficacement. On a suivi avec une inspection peu après, et je pense que dans un cas, ils ont mérité un A.

Donc ---

MEMBRE HARVEY: Vous mentionnez que c'est un rendement qui n'est pas acceptable. Est-ce que ce rendement-là pas acceptable a pu durer une longue période de temps?

M. RÉGIMBALD: On va faire une inspection du secteur médical une fois tous les fréquences d'inspection pour la médecine nucléaire c'est une fois tous les deux ans.

Maintenant aussi les rapports de conformité qui sont soumis annuellement, donc avec cette information on peut voir si on peut détecter des problèmes de cette

façon-là ou s'il y arrive des incidents.

Mais lorsque nous découvrons le problème, il est réglé assez rapidement.

MEMBER HARVEY: Mais pouvez-vous déterminer depuis quand le problème existe parce que si c'est non acceptable puis ça dure deux ans, c'est long.

THE CHAIRMAN: Let me jump in, if it's unacceptable in the medical, we shut them down.

MEMBER HARVEY: Right, but ---

THE CHAIRMAN: There's none of this unacceptable for two years. So I think we should be absolutely straight about some of those things.

MEMBER HARVEY: That's right, but when you detect the problem, if it's not acceptable, you close it, but it has been -- it could have been like this during the last two years.

THE CHAIRMAN: No, not in the medical. That's what the risk inform business is. Certain sectors get a lot more attention than others, if I understand correctly and the medical one is you do an audit or inspection every two years.

MEMBER HARVEY: Every two years, but if after two years you detect that it's unacceptable ---

THE CHAIRMAN: If you detect that it's unacceptable, then actual measures are taken right away.

MEMBER HARVEY: Yes, but you don't know if it has been like this during one year or two years.

THE CHAIRMAN: Well, yeah, but I mean you're not going to do 100 percent all the time, every day. You're not going to live there for inspection.

M. RÉGIMBALD: Mais, encore une fois, si on détecte un problème avec, par exemple, avec l'information qu'on a du rapport annuel de conformité, on peut intervenir à ce moment-là.

Puis aussi, les mesures qu'on a prises ont été publiées sur le site web. Alors les hôpitaux n'aiment pas voir leurs noms sur le site web, donc ils se conforment assez rapidement et le message passe avec les autres titulaires.

MEMBRE HARVEY: Merci.

THE CHAIRMAN: Dr. McDill?

MEMBER McDILL: Thank you.

There is -- I think I made this comment before -- there's a huge amount of work in this, 15,000 workers, and if it's really the first of its kind in terms of regulators, which is what you have said, I think it's worth putting in a little more effort to finesse it so that you really look good.

So a couple of suggestions. For example, on page 17 of the report, just as an example, you state

that there were 3,589 workers sampled in 2011. That's quite clear. The next paragraph down -- so I'm in Section 6.1.2, second paragraph says that there are 3,589 workers sampled.

The next one refers to the 555 nuclear energy workers sampled, and that's Figure 10. And then you go immediately "As shown in figure 11, one worker of the 296 sampled," and it doesn't say what they're sampled in or from. You have to actually go to the graph to find it, and this is sort of a tidily little point, but it's the kind of thing that makes readers struggle a little bit to find the data.

So at first, when I first read it, I thought, okay, it's one of 296 in the 555. And then when I went to the figures I realized that you have to add them all up. That was clear once I got to the figures and added them all up.

Then you move down to Figures 12 and 13 and 14 and 15 and the amount -- the numbers disappear. So the first one had 555; the next one had 296; 12 and 13 don't have any numbers about how many were sampled. So it's -- my concern is more stylistic or maybe thoroughness in the writing style. It's not a complaint against the work at all. There's a fantastic amount of work here and I think the amount of work will shine if we just tweak it a little

bit more. I shouldn't say "we" because actually I mean you.

Another suggestion, and I think I may have made this before, it varies from sector to sector, of course, but in most scientific reporting, and not all, figure titles go below the figure and table titles go above. And you may have been -- there may have been some discussion of that when the report was written, but what happened for me was I always got the wrong title. I got the one below before the one above.

MS. TREMBLAY: I can answer. That's an easy easy one to answer. Isabelle Tremblay.

For web accessibility, the new guide is that everything has to be above so that people with reading devices, the device reads the title first. It's web accessibility measures.

MEMBER McDILL: Well, that's ---

THE CHAIRMAN: So all you scientists will have to adhere to the web accessibility.

MEMBER McDILL: We'll all have to adapt.

MS. TREMBLAY: Well, the public servants will, yes.

MEMBER McDILL: That's fine. That's an excellent explanation. I have no problem with that.

So presumably table titles will be at the

top as well from here on in, and all those journals are just going to have to capitulate. I have no preference for where they are at all. It's just that, you know, when you get beaten on it for years and years, that's just the way you do it.

But in terms of things like introducing each subject and each group of workers, it would really -- it would make the report shine, I think.

Similar comments -- and again, these are mostly sort of tiddly -- when you do the sectors and sub-sectors, for example, I guess the first one that comes up is on page 27. We have blue and up until now blue has been used exclusively for 2008 as a color code and now blue is being used for sectors and sub-sectors. I don't know if there's another color available, but that would be the kind of thing that would -- because when I first saw it, I thought, oh ok, this is going to be some king of 2008 thing. And the the subsector, the reader has to read the title to figure out what the subsector is each time. It's no big deal; it's just annoying.

So if you're sending this out to an international market where not everyone's first language is English and everyone is trying to see what it is the CNSC has actually done for the first time, that would be a suggestion.

One question, on page 67 there's some CT imaging of concrete which has come out of a cancer centre, and I was intrigued by that. It looks like the cancer centre analyzed its own concrete barriers, which is cool. Is that correct? I'm getting a nod. I think that's really fascinating.

THE CHAIRMAN: Mr. Jammal, you may ---

MR. JAMMAL: Dr. McDill, you're raising a very good question. Actually, in our requirements, this is -- Dr. Schneider is known for his ingenuity of using non-destructive testing of the Cobalt-60.

But in all seriousness here, the requirement under the CNSC, as the cancer centre is being built, they must verify and ensure there are no voids in the shielding. Because of the high energy accelerators. We want to make sure that the concrete -- and sometimes when it's a high-density concrete, there are no voids in the structure of the concrete. So they provide us with third-party verification of the density measurements and to include density testing, if they have it, to confirm that there are no voids in the shielding, because when we do the commissioning or when staff is doing the commissioning, they verify the radiation fields to ensure that there are no voids in the shielding.

MEMBER McDILL: But if this is their own

shielding, how have they been licensed if they haven't proven the shielding, or is this for some other shielding?

MS. PLANTE: Jacinthe Plante for the record.

This is new irradiator that is used for experience. In this case, probably it's not their own shielding; it's the shielding for other purposes for research.

MEMBER McDILL: Merci.

I think it is a tremendous amount of work and I know that there's more than one group that's been involved in putting it together and to get a cohesive report from four or five different groups is always a challenge. So I commend you on doing that.

I think before you post it in two official languages, just notch it up a bit and it will be so much more of an international document.

Thank you, Mr. Chair. Feel free to comment.

MR. RÉGIMBALD: Thank you, Dr. McDill. These are good suggestions and we are open to these suggestions and comments to improve the clarity and the readability of the report and presentation, so we will take those into account.

Thank you.

THE CHAIRMAN: Mr. Tolgyesi.

MEMBRE TOLGYESI: Merci, Monsieur le président.

Première chose, je vous félicite parce que c'est une grosse job et il y a beaucoup de choses qui sont là.

Now, one comment is this probably a typo error. When you are saying in the report at page 2, you are saying industrial sector has 1,456 licences and at page 39, you are saying that it's 1,482, so -- so it should be one or other one; probably just a -- 39. Page -- page 2, Executive Summary, industrial sector 1,456 licences and -- and on page 39, reported events and incidents, there is 1,482 licences, so ---

MR. RÉGIMBALD: It's a -- the real number is 1,456, so we will make that correction ---

MEMBER TOLGYESI: Okay.

UNIDENTIFIED SPEAKER: --- on page 39.

Thank you.

MEMBER TOLGYESI: Okay. Now, what I have a question. You know I was looking this and I said, "Okay, we have so many events. We have so many licences and there is so many employees or workers who are affected."

And when you're looking at page 90 is a number of workers that sampled; that means those are

workers who are exposed or who are working for that sector, eh?

MR. RÉGIMBALD: Okay, the sample -- the sample groups, the nuclear energy workers and the non-nuclear energy workers; okay, but it -- but it's a sample of that population. There are many more workers. The data is extracted. This is why the column is called "Number of workers sampled". So when the annual compliance reports come in, the licensees indicate the number of workers and exactly the graph that you see here with ranges and they indicate the number of workers they have in each range.

So when we analyze, we take all the annual compliance reports, then we add -- we add them up. For example, there are 2,500 annual compliance reports submitted each year, but in order to provide a meaningful -- meaningful data, we sample at least 200 for each sub-sector and if we don't have the 200, we sample 10 per cent of that. And -- or we take them all -- if it's 200, we take them all. If it's more than 200 reports submitted, we take 10 percent of -- of those reports and we aggregate the number of workers according to the graphs.

So that's how we -- we tabulate the number of workers, the samples and count and just, not calculate, but report on the percentage of doses that they have

received.

MEMBER TOLGYESI: So that means that in commercial is more than 838 ---

MR. RÉGIMBALD: Yes.

MEMBER TOLGYESI: --- workers, you know ---

MR. RÉGIMBALD: Yes.

MEMBER TOLGYESI: --- because I tried to find, you know ---

MR. RÉGIMBALD: Okay.

MEMBER TOLGYESI: --- how many events we have and how many workers are there, how many licenses. Licences, it's okay because when you look for commercial, you have 13 events and 250 licences; that means that every 13 licence -- 1 event is for 13 licences. How many workers it represents, you know. It's -- it's more how you compare them.

And also when you are looking like in a medical or in an academic, it's kind of confined areas; whereas, commercial, I suppose you transfer them, the devices, et cetera, so you know what's exposure. But I don't have a number of employees, so you know, I -- I was interested; I mean, personally, but I don't know if it's worthwhile to put it in this kind of report.

THE CHAIRMAN: On that -- on that matter, I think Ms. Velshi also asked that.

I -- I think it would be useful. I'm not -- and by the way, we're trying to get the 2011 report out. This is now 2012, so it's maybe for some next year.

MR. RÉGIMBALD: Yeah.

THE CHAIRMAN: You may want to put a description of the sector; you know, like the number of licences from year to year goes up, down, how many employees are in there, maybe -- maybe some of the risk differentials between the medical and the radiographers et cetera and how you allocate resources for the inspection.

Some of this socio-economic side of the sector, if you want to describe it, would be -- would be probably useful.

MR. RÉGIMBALD: Yeah, the number of workers, we would have to look at all of the annual compliance reports, the 2,500 of them. And we would have to wait until December 2012 when all of them are in; okay? So for example -- but no, I'm sorry, 2013. So the report would be out only in 2014; okay? So because the licences are not -- are not issued on the same date, so the licences are -- can be issued any time during the year, so for example, if a licensee has his licence issued in November or December of 2012, then his report will come in in December 2013. So that's why, for 2012, we will -- we analyze the annual compliance reports received up to May

or June.

THE CHAIRMAN: But you can do some estimate. This is not a precise necessarily.

MR. RÉGIMBALD: Yeah.

THE CHAIRMAN: If you look at employment ---

MR. RÉGIMBALD: M'hm.

THE CHAIRMAN: --- and growth, you don't need the -- you don't need the great precision because you can look at the historical data and do some projection and some of it can be an estimate.

MR. RÉGIMBALD: Yeah, we can look into that to see if -- if we can provide some information on that.

THE CHAIRMAN: Right.

MEMBER TOLGYESI: Okay. On -- on page 4 of your report, when you look industrial rating and percentage of satisfactory or fully satisfactory inspections -- I'm looking to industrial sector -- is increasing from 2010 to 2011; whereas, the number of incidents or events is increasing also and the enforcement activities are increasing also. So you know, the events are increasing, the enforcement activities are increasing, but you are more satisfied.

MR. RÉGIMBALD: The -- the difference is that work in the industrial sector has -- is of greater

number. So for example, because of infrastructure work in Canada, there are more usage of portable gauges on construction site, for example, more usage of industrial radiography operations. So therefore, there is the potential of more incidents happening; okay? But nonetheless, when we do our inspections, the programs in place are satisfactory and perhaps Mr. Rabski can provide some detail, but this is the -- this is the explanation for increased -- it's because of increased work, there is a likelihood of increased incident.

MEMBER TOLGYESI: So you see this is where the number of employees will -- will help. What you are saying that the number of employees are increasing, the number of devices are increasing, so it's potential for number of events increasing also.

MR. RABSKI: Henry Rabski, for the record.

You're correct. The increased activity will result in events. If the -- if the industry's on the downside and no one's working with the devices, the likelihood is the -- the events will contract. So the activities are a fact of what the -- what the industry is doing at that particular moment in time. What our concern is, is: are those programs solid? What we're getting is events reported and that's what we want. They're required under the regulations to report those events and there's

nothing wrong, events happen, they have procedures in place that we -- we review to respond to those events. They have emergency procedures and that's the purpose of the -- the overall program, so that means they're working.

The compliance work demonstrates, assesses how effective those programs are and what we're saying over time that they're improving. It's the Radiation Protection Program in the industrial sector and compliance level is improving and that's a positive. The events, that's -- that indicates the level of activity that's going on in the industry and the report indicates for 2011, the industrial sector saw some activity and that moved into 2012 and we're tracking that.

THE CHAIRMAN: But that's the kind of economic introduction to a particular, so if there is all of a sudden a huge increase in road paving, you know, that would explain some increased activity. So you want to -- you want to introduce an overall picture of the data; what kind of economic activity was going on for that particular sector that may explain some of the increase events.

MR. REGIMBALD: Yes, that's a good point and we can provide some context to, you know, to explain or for the reader to understand the data.

THE CHAIRMAN: Mr. Tolgyesi?

MEMBER TOLGYESI: This is same thing on

page 41, you know, when you are looking malfunctioning or damaged devices is a huge increase. That's why, because what you are saying your activity. Now if we stay on page 41, 2, 3, this is Orders and Measures to be taken. There are six related to safety programs. They are orders and measures requesting to keep gauges, devices in storage until appropriate training program is completed.

What kind of measures and procedures are required regarding the storage and -- and reuse of material?

MR. RABSKI: Henry Rabski for the record. If -- if an order was issued to store nuclear gauges or devices until the program was restored, there is no -- no use permitted of those devices and in most circumstances when the inspector would be on site, those apparatus would be locked out until such time as the licensee came back into compliance. In those particular cases where the expectation is on improved -- is on -- with respect to training, there would have to be validation that the training took place before the order would be considered closed.

MEMBER TOLGYESI: When you say locked up, who is doing that? Is ---

MR. RABSKI: Henry Rabski for the record ---

MEMBER TOLGYESI: --- or it’s somebody for -- it’s somebody from the Commission.

MR. RABSKI: The -- the inspector who issued the order would -- would lock the device prior to -- prior to leaving the site. If it’s -- if it’s going directly into storage or would lock the -- could lock the device out in the field and have it moved to storage.

THE CHAIRMAN: Okay, I’m going to have another round or we take a break, what?

UNKNOWN SPEAKER: Take a break.

THE CHAIRMAN: Take a break, okay. I hear we need a break so we will reconvene at a quarter past -- quarter past 11. Thank you.

--- Upon recessing at 10:57 am/L’audience est suspendue à 10:57

--- Upon resuming at 11:17 am/ L’audience est reprise à 11:17

THE CHAIRMAN: Okay, we are continuing and then maybe go for round two, I’ll start with Ms. Velshi.

MEMBER VELSHI: Thank you Mister President.

Following up on the discussion we had around dose and sampling - and I’m sure my colleagues are familiar with it - but I was -- I was wondering why we do a sampling, a representative sampling as opposed to doing all the workers, all the NEW’s and non-NEW’s in -- in this

sector, and I understand that you get the information from the ACRs and they come -- and they come towards the end of the year. But isn't there a National Dose Registry that you could use to get the -- the doses?

MR. REGIMBALD: Yes there is the National Dose Registry, but their data is up to date until 2007. That's the most recent official data. Perhaps if Mr. and Mrs. Purvis can clarify that?

MS. PICARD: Yani Picard for the record, from the Radiation Health Sciences division. I believe what Mr. Régimbald is referring to is that several years ago; the National Dose Registry published annual reports that summarized dose for all workers in Canada -- excuse me. For the last couple of years, they haven't done so, however, just to set the record straight, the data in the NDR is up to date.

THE CHAIRMAN: So what does it take to make it useful so we can tap into it and get some real data?

MS. PICARD: M'hm. We -- we do use the NDR on pretty much a weekly basis to access a -- a variety of information regarding doses for workers. In order to capture all of the dose that's presented in the report that you saw today, we would have to basically search for every single company, so there would be

thousands of companies that we'd have to search in the NDR and that is quite a massive undertaking.

MR. JAMMAL: Ramzi Jammal for the record. You asked a good question, Sir. It -- there are two components. Your question is very valid on the National Dose Registry and the publication of the report that's a few years behind. I mean, we're not here to critique Health Canada. That's -- the NDR is -- has their own capacity to do things.

There are two issues as Mr. Régimbald has mentioned. We use the ACR for -- at two levels because in the Annual Compliance Report, the licensee report to us doses to the individuals who do not submit their doses to the NDR. So they use other methodology as part of their annual report.

So, the NDR does not give the full picture because the NDR, the National Dose Registry, is for nuclear energy workers or people who are required to have a dosimetry as part of their job. And the licensees do have monitoring that does not require them to submit nor use a licence dosimetry service, so the ACR provide us with that information.

So it's -- it's I won't call it complex. It's a very taxing system. Now, since the CNSC, for a period of time, we did not have direct access to the

NDR because of the IT issues that's been fixed right now, on the information exchange or capacity to do so.

So for the next years and actually talking to Dr. Thompson, we were going to start to do several things. One of them is the QA, correlation between what we are presenting to you versus the NDR. And preserving the -- the -- providing you with the global picture of workers who are reported to the NDR versus worker who let the licensee by the law, they can ascertain the dose. And they do not require to provide a dosimetry service for their employees, because we verify that the dose is below requirements for them to have a dosimetry licenced service.

MEMBER VELSHI: Thank you. I think that would be extremely helpful because when we talk about sampling, and you mentioned that given the NCR's command, you are really look at those that have come in by mail for each year which means that those who have licences in the latter half of the year, you probably never include them in your samples. Is that correct?

MS. TREMBLAY: Actually we -- we -- Isabelle Tremblay, we use the ACRs for the 2011 year including those submitted all the way until May-June 2012. So the sampling is done on the random basis at the licence numbers, so we -- we randomly pick licence numbers and

those that are randomly picked, we extract data from the ACRs for the entire 2011 year.

MEMBER VELSHI: But if I have a licence date of November, then my 2011 report wouldn't get submitted until November, 2012, which means it wouldn't make it in your sample; is that correct?

MS. TREMBLAY: It would make it in the following year.

MEMBER VELSHI: But that's not a 2011 report. I mean, for your 2011 report, you're looking at the ACRs that you have received by May of 2012.

MS. TREMBLAY: We would -- because let's say the ACR, the report -- that dose data in the report covers November to November, the majority of the time period is in 2011, then it would be in the 2011 reporting year, because it's November to November, let's say.

MR. RÉGIMBALD: Mr. Fundarek will provide additional information.

MR. FUNDAREK: I'd just like to point out that the annual compliance reports that are submitted by licensees don't reflect their calendar year. They're submitted based on the twelve months preceding the due date of the ACR. So it's -- they're not operating in a twelve-month basis.

MEMBER VELSHI: Okay. That's very helpful,

thank you.

THE CHAIRMAN: But just so I understand, when you mention is (sic) sampled workers, are these numbers extracted from the licensee ACR, or is it extracted from the Health Canada dose database?

MR. RÉGIMBALD: No, it's taken from the licensee's annual compliance report.

THE CHAIRMAN: So you sampled from their report or you take their numbers?

MR. RÉGIMBALD: Yes, we take -- we analyze -- we took how many -- how many did you take in 2011? Like 1,000?

MS. TREMBLAY: Oh, I didn't do the ---

MR. RÉGIMBALD: Well, we'll look at ---

MS. TREMBLAY: Oh, I have that, yes.

MR. RÉGIMBALD: Okay, Isabelle will come up with the number of ACRs that we did take for 2011 ---

THE CHAIRMAN: But if we ---

MR. RÉGIMBALD: But the point is that we -- the reported data from the licensee is exactly what the graphs show, like they show a range of doses and the number of workers in that range. So we take that, and we sum up. You know, we take licensee ACRs for that subsector or that group of licensees, and we sum up the workers in that range. That's how we come up with the ---

THE CHAIRMAN: But if you had -- but this is something that you then trust their numbers? Let me put it this way. You trust the numbers submitted by the ACR, if I understand correctly?

MR. RÉGIMBALD: Yes. Yes.

THE CHAIRMAN: It's the licensee numbers?

MR. RÉGIMBALD: Yes.

THE CHAIRMAN: So if we had a good relationship with Health Canada, and we were able to extract all this information, wouldn't it be easier to go to the existing database and extract all this information, even if you have to go licensee by licensee?

MR. FUNDAREK: The use of the NDR database would not provide us with the non-nuclear energy worker information, which is the majority of the workers in our sectors that we look at.

THE CHAIRMAN: That's another whole different world I cannot understand. I thought all people who used the dosimeter must report dosage to Health Canada.

MR. FUNDAREK: Yes, all people who do use our licensed dosimetry service are required to report their doses to the National Dose Registry, however, as I indicated in an earlier response, some of the doses -- the doses to workers can also be estimated, and they can be

inferred from other measures. Those doses are not necessarily reported to the National Dose Registry.

THE CHAIRMAN: We've got to have a conversation about all of this. I don't understand a lot of this, and I don't understand this, the statistics and the science behind all of this.

MR. JAMMAL: Okay, Ramzi Jammal, for the record.

Sorry for -- if you'll allow me, sir, it's the intent here to present two issues. You are correct, if we want to be the -- as accurate, then we have to step back in order to do the verifications.

For the NPP annual report, we do rely on licensees data, because the licensees are providing information to us, and then we verify this information against the National Dose Registry.

Just to complicate life, the whole dosimetry system is not on line, on the fly, type of activity. A lot of times, where the dosimetry -- licensed dosimetry service issues the dose result to the NDR, National Dose Registry, a lot of times the annual compliance report due date is before then, and then they provide us with that information. And we do correlate. I have my colleague, Caroline Purvis, who is the Director of RP, and we do that verification, in addition to the desk

top verification between the National Dose Registry and the information from the annual compliance report.

I will ask our inspectors to correct me if I'm not saying it properly: Our inspectors in the field, they do verify, as part of the inspection, the dosimetry of the workers as provided to us and against what the licensed dosimetry gives them, if they are using the licensed dosimetry service, so the -- and they are, or not.

Our inspectors in the field, they do verify the exposure of the workers against the practices or how the licensee ascertained the dose to determine what is the dose to the worker.

So we have workers who have direct reading badges, okay, that are not "qualified" to be accepted by the NDR, so the whole field is how the dose is being ascertained, how the data is being collected. We're still working towards improvement, and we do correlate against the NDR for the workers who are reported.

Now, yes, we can go to the NDR and we will have to start to look at the risk-informed decision. Ms. Rickard next to me, she just told me they'll be massive, because I know from information -- we can go by worker, worker's name and everything else, but it becomes -- we're talking of thousands of the people -- Ms. Velshi asked the

question, “What percentage of global workers are being monitored?” Well, I can tell you -- I mean, again, I’m an oldtimer, so I’m giving you history here.

They usually manage around 700,000 doses -- dose records, 700,000. And those include from the provincial authority, low-energy x-rays, to the CNSC. So the NDR categorize the workers by the profession, from engineer to scientist to technician, and so on and so forth.

But, again it’s the capacity of providing the information in a timely manner in order to address our report and to ensure there are no variations, nor exceedence. We are relying on the ACR, but we’re relying on the ACR not in a blind manner.

There is always verification against the National Dose Registry and, as a matter of fact, it’s required by law. The licensee must always inform us if there are any changes in dosimetry or discrepancies, and then they go back and correct the NDR, or they do the root cause for the discrepancy between the worker dose and what is in the field.

We’re looking at thousands of workers and we are enhancing and actually putting in place the proper -- I won’t call it scientific methodology, because there’s nothing earth-shattering about this, except tracking and

providing the information.

THE CHAIRMAN: Ms. Velshi?

MEMBER VELSHI: Okay, if you can turn to page 28 and 29 of the report, please? And on page 29, where there is a comparison on inspection ratings of radiation protection, Figure 25, the radiation therapy subsectors performance looks rather dismal to me, where they have less than 50 percent satisfactory rating.

And I see on page 28 that one of the reasons given is that you may have a licence holder who holds multiple licences, so you get zinged multiple times. The question not so much on the -- on unacceptable performance, is what are the forums for learnings and sharing of best practices for this sector?

MR. RÉGIMBALD: There is the -- there are several outreach activities that the division responsible for this licensing conducts throughout the year. They meet with licensees at different venues. Perhaps Mme Plante can elaborate on that?

MS. PLANTE: There’s two venues for where we meet the licensee. There’s two conferences that are held every year; there’s the Canadian COMP, the medical physicists. -- so there’s conferences, we are there, and we have a chance to chat with our licensees. And there’s also the CRPA, where also our division is going and

meeting with the licensees. It's a non-threatening environment, I will say.

And in addition to that, we have a good chance to discuss with our licensee when we do inspection.

MEMBER VELSHI: But you know, it's what we see in other parts of the nuclear industry where their learnings from one part -- you know, the OPEC system and, you know, whether you put it on your Web site, here is something that's gone wrong or here someone's done extremely well that others can learn from.

Is this not an area, given the performance, you don't even see improvement, in fact a decline, that it needs a concerted effort and see what needs to be done to bring them up to at least the 80 percent that we see in the other areas of compliance or satisfaction?

MS. PLANTE: Jacinthe Plante, for the record.

Unfortunately, the data that are represented here are emphasizing the fact that there were non-compliance, but they were minor. They were administrative. And because of the data that was performed on consolidated licence, it represents not well the rating of the performance in that sector.

But they have a way to improve in that sector, and I know that some provinces will exchange the

information and provide the different non-compliance and they share their information with other licensee.

Is there a formal way to inform a licensee? I'm not aware.

MR. RÉGIMBALD: We also publish the DNSR newsletter on a bi-annual basis, and we can also publish special editions if there are areas of fault that we want licensees to focus on. So this -- there is information available there on sharing best practices.

THE CHAIRMAN: Let me ask the question differently, though.

In 2012 -- we're now in 2013. Are we going to see improvement in this particular sector; yes or no?

MS. PLANTE: Jacinthe Plante, for the record.

Unfortunately, I don't have the data. We were going to look for that data and inform the Commission.

THE CHAIRMAN: But again, to -- another line of inquiry here was when it's unsatisfactory, we don't let them, you know, off the hook for long time.

It's unsatisfactory 50 percent, if I understand correctly. The numbers are more than 50 percent is unsatisfactory. Then what is it you're going to do to make sure that it's become satisfactory ASAP?

MR. RÉGIMBALD: The -- there is close follow-up with licensees. At the end of the inspection, the licensee will know exactly where the non-compliance, what our findings are and there is action that are required of the licensee. And these actions must be implemented within a short time frame and staff follow up on timely implementation of all the action. So we close the actions.

If there is issues that relate to health and safety that are more severe, then we would issue a formal request under sub-section 12(2) of the General Regulations, which require very strict timelines and very strong action to be taken by the licensee. But we don't leave the -- you know, things hanging.

We do follow up on actions to be taken by the licensees if there is unsatisfactory issues identified.

THE CHAIRMAN: It's just any time we talk about medical therapy, it begs -- it begs an explanation when you get the performance that's below 40 percent, okay. That's the issue here.

Mr. Jammal?

MR. JAMMAL: Thank you, Mr. President. It's Ramzi Jammal, for the record.

Point well taken. We're telling you what

the findings were. We're not telling you how many were closed. And if they were closed, they were closed to satisfaction. And that's why we're having this discussion.

For the next year's annual report, we would need to amend two things, risk informed. What does this 40 percent mean is it immediate shutdown? Or should we come before you for them to be shut down?

Second is, how many are closed and were they closed to our satisfaction?

So that's where we need to improve the reporting of the data in order to say 40 percent were found, 100 percent closed. And if they were -- like what category with respect to the risk, you ask about the operating experience. Yes, it does exist at two levels.

Some radio-oncology cancer centres, they do their own self-assessment by visiting other centres, and that is a practice at British Columbia Cancer Agency. I'm going by memory now.

And I don't know if it's been adopted somewhere else, but they do have the self-assessment.

With respect to the machine and the safety, if it's safety issue, we were before you multiple times on issuing orders for other machine that's not certified by the CNSC that was being used, so we issue orders in order

to stop the practice if it's a safety issue.

But point well taken. You know, what does the 40 percent mean and how many were closed?

THE CHAIRMAN: Ms. Velshi?

MEMBER VELSHI: Thank you. That will be extremely good.

My last question turning to page 41 and to 43, on enforcement activities, and it's kind of tied in with what Mr. Jammal has said, is I look at these orders and I look at how long it took to close them.

Most of them were closed within a couple of weeks, which kind of raises the question, what is really root causes for these systemic issues that these orders required to address that one can, you know, close them that promptly?

MR. RABSKI: Henry Rabski, for the record.

The inspections -- the orders that are issued, for the most part, require retraining of workers and work on particular aspects of the programs. And they can be dealt with effectively by licensees to close an order. So I think they're not insurmountable. But they're actions that can be taken quite routinely by licensees to address our regulatory concerns.

MR. RÉGIMBALD: And if there are issues that indicate systemic problems, then we can conduct a

Type 1 inspection or an audit of the licensee's program to make sure that these issues are addressed.

MEMBER VESHI: And if there was such a Type 1 inspection or audit, would that be shown separately in the report?

MR. RABSKI: Henry Rabski, for the record.

Type 1 audits were included in inspections, so it's rolled into the overall performance of the Directorate, so we would combine them as part of inspections in general.

For the record as well, we do -- on the operations inspection side of the compliance, we do conduct Type 1. They are focused, as you say, where we see -- where we may see performance falling off at a particular licensee.

Licensees that have a large infrastructure or network where a Type 1 audit is appropriate, when the operations are quite small, what we would do is we would do enhanced or more frequent site inspections. We call them Type 2 inspections, where there are -- where they are snapshot inspections to see how the programs are functioning and how people are working.

But we do those occasionally and we target those, as you point out, where we find a large number of events reoccurring -- average performance. Not poor

performance, but average/below average performance. And areas where there's risk and larger licensees.

THE CHAIRMAN: Dr. Barriault?

MEMBER BARRIAULT: Thank you, Mr. Chairman.

If I recall, last year we had problems with the dosimetry badges, and it begs the question, does any of this data come from that source of dosimetry that we've had problems with before?

Just a brief answer.

THE CHAIRMAN: What -- are you making reference to the Health Canada ---

MEMBER BARRIAULT: That's correct, yes. The calculations.

THE CHAIRMAN: This is the Health Canada calculation of calibration.

MS. RICKARD: Melanie Rickard, for the record.

Yes, the issue that was talked about last year with the NDS has been resolved. They've corrected their algorithm. That was the issue; their algorithm was not applied properly. And we've actually conducted a Type 2 inspection to verify that they've implemented things correctly, so yes, the problem's been corrected.

MEMBER BARRIAULT: And do we have a mechanism to assure ourselves that this doesn't recur?

MS. RICKARD: Yes, we've -- their quality assurance program, which was really part of the root of the problem, has been extensively revisited, and we're following up very closely on this matter.

And the dose records have been corrected as well, the ones that were affected.

MEMBER BARRIAULT: That's all. Thank you Mr. Chairman.

THE CHAIRMAN: Thank you. Mr. Harvey.

MEMBER HARVEY: Merci Monsieur le Président.

On page 17, 612, just a comment, in third paragraph: "And furthermore, more than the 50 percent received doses lower than 1 millisievert, public dose limit, and all news in the area received doses under 20 millisieverts, well below the regular". It's just, when I say that "well below", 20 is 40 percent of the -- it's well below -- it's below well. You must reserve those terms for when it is really below.

MR. RÉGIMBALD: Thank you. Understood.

MEMBER HARVEY: On page 34, the last paragraph before the figure there: "Based on the conversation with licensees, this increase likely… tah tah tah tah". Is this the only means by which you can verify that? Because just to talk with those, with licensees,

it's the only mean by which you've got the answer?

MR. RÉGIMBALD: Yeah. We have -- we have two meetings, we -- okay, I'm sorry -- we have a meeting with industrial radiography licensees every year. We have one in the East and one in the West and we have a good attendance, we have at least half of the licensees or more present there and this is the feedback and the conversations we have with them and this is how we can -- we can be known of this information.

Y'a aussi les interactions au niveau du groupe conjoint de la Commission avec l'industrie, qui a lieu deux fois par année. Donc il y a trois occasions durant laquelle on peut avoir des discussions avec les titulaires, puis les titulaires de permis dans la gammagraphie industrielle sont à peu près une centaine, donc 100, plus ou moins 100, alors c'est plus facile pour nous d'avoir l'information avec les trois forums qu'on a annuellement.

MEMBER HARVEY: Mais c'est le seul moyen parce que je vois que -- qu'un "Greater number of exposures being performed". J'imagine que vous pouvez vérifier techniquement si y'a eu plus ---

MR. RÉGIMBALD: C'est ça. Donc on voit qu'il y a une plus grande utilisation, une (sic) plus grand usage des appareils qui résulte à de plus grandes

expositions ou un nombre plus fréquent d'expositions, c'est pour ça qui ---

MEMBER HARVEY: Bien c'est que -- l'essentiel de ma question c'était ça. Est-ce qu'y a moyen de vérifier ça, techniquement, qu'y en a eu plus qu'avant? Est-ce qu'y vous fournissent le nombre d'essais qui ont été faits ou de travaux qui ont été faits?

HENRY RABSKI: Henry Rabski, for the record.

The licensees are not obligated to record the actual number of exposures that they would conduct in the course of their work or usage of the -- of the radiography cameras. However, our work with the working group, with the source or the organization that represents radiographers and our work generally in Western Canada attributed by inspectors confirms the fact that there is more radiography work being conducted, hence more exposures would be taken and dose to workers would increase.

THE CHAIRMAN: Thank you.

MEMBER HARVEY: Merci.

MEMBER McDILL: Thank you. On page 88 of the report, there's a table, C1 I guess: "Number of licenses by sector", and it's interesting to me that there, right across the board, there's been a decrease in

the number of licenses from 2008. I'm not sure that you can tell me what it means, but why has there been -- these non-consolidated licenses? Did someone consolidate it? Or have we weeded out the bad licenses?

MR. RÉGIMBALD: You're right. There has been consolidation of licenses. This is the most likely explanation, but if Peter can add to that.

PETER FUNDAREK: The administration of the licenses in all four sectors is a very fluid operation. We get new license applications every year where there's a number that get revoked. Following changes in 2008 when the Nuclear Substances and Radiation Devices Regulations were changed to change the exemption quantity, for Nickel 63 for example, a number of licences for gas chromatograph were dropped off. So there's regulatory changes that occur over time, there's industrial changes that occur over time, research shifts from the use of nuclear substances at hospitals and universities that shifted greatly to non-radiological uses. So, there's a general shift, it's hard to pin it down on any one factor because we're looking at the whole range of uses of nuclear substances and radiation devices in Canada. So you can't pin it down to one thing.

MEMBER McDILL: I can certainly see the academic and the research coming down, they're probably

one of the largest percentages, but industrial has dropped 300 over -- steadily from 1,700 to 1,466. So, it's a bit, I mean they're all down right across. Some of it can be economy as well my guess but --

PETER FUNDAREK: Yeah, from the industrial side of things there's company mergers that happen, some industrial radiography companies have merged together. We're down from -- the number before used to be about 178 radiography companies and that's been down to about 114 now. So there's been a significant reduction there. Pulp and paper industry went through a significant downsizing so a lot of the fixed gauges used in that industry have gone away. But there's been some number of applications for portable gauges as well coming through. So again, it's hard to pin it down to one area, or anything like that, but on the net benefit, yes, there is going to be a reduction, manufacturing sector changes will also contribute to downsizing.

MEMBER McDILL: Thank you.

THE CHAIRMAN: But just to follow, that's why it would be really useful to try to explain the pattern because it begs the question whether this is a consolidation or actual decrease in activity. You know that we've argued, for a long time, I remember how the medical use will exploded and there will be all kind of

new application et cetera. When you're doing the medical sector it's not ---

MR. RÉGIMBALD: There may be an increase of activities under one licence, although I'm not necessarily issuing more licences, but there are greater activities conducted one licence.

THE CHAIRMAN: But it would be nice if one can actually capture increase activity and explain that there's two things going on here. Right now the report is silent about that.

MR. RÉGIMBALD: We will add some information on that.

THE CHAIRMAN: Ok, Monsieur Tolgyesi.

MEMBER TOLGYESI: Just, also the statistics, when you look page 36, you are looking annual whole, but the dosage to nuclear energy workers. Sample of nuclear energy workers decrease from 1,700 in 2008 to 400 in 2011, which I will say probably it's activities less, but I don't know.

ISABELLE TREMBLAY: Isabelle Tremblay.

For example, figure 33, yes the number -- it could simply mean that when we -- when we sample the -- when we extract the information from the reports, if we happen to have a large company with a large number of employees one year, obviously it counts for many more

workers than the following year if, let's say, that company was not randomly picked.

MEMBER TOLGYESI: Yeah, that's what I think, that's why I was saying that it would be good. My last question, page 76, in commercial subsectors, commercial subsector isotopes production accelerator subsector, you have one two three four five … fifth line from the bottom of this 6481, *"radiation protection and operating performance grades are not our label for this sub-sector."*

Could you comment on that? It was not measured or it's not necessary or what?

MS. PLANTE: Jacinthe Plante for the record. They were inspected so in that field there's 11 -- let me find the number, there is 14 isotope production facilities. And they were visited for inspection in type-two, there were six type-two inspections. Since my colleague here did inform you, type-two inspection is a snapshot of the operation. We didn't provide grades because we provide grades only for a full focus inspection on safety control areas. So there were six inspections performed in that year for scyrotrons, for isotope production. We didn't provide grades.

MR. RÉGIMBALD: However, the licensee is informed of the findings of the inspectors. So if there

are any non-compliance for the areas that the inspectors have looked at, then we expect licensees to come up with corrective actions.

THE CHAIRMAN: Okay. Anybody -- last chance?

I'll just say one really minor question because I didn't -- that was -- didn't understand what it says. So on page 26 there is a little photo of skeleton in there. What does attribution 3.0 mean? Somebody. Please?

MS. TREMBLAY: Isabelle Tremblay. This is simply the way we need to give credit to Wikipedia. So the --

THE CHAIRMAN: Attribution 3.0?

MS. TREMBLAY: I believe attribution 3.0 probably refers to some kind of -- per this attribution the pictures are public -- are public domain -- are in the public domain. So this is simply to follow the -- yeah, the protocol of caption of credits.

MEMBER McDILL: Creative commons has a number of kinds of freedom of information kind of and the number three is basically open to everybody for everything you ever wanted.

THE CHAIRMAN: Okay.

I was just curious. I thought I was

missing something here. Okay. That's good.

MEMBER McDILL: But thank you for adding the reference. They'll appreciate that.

THE CHAIRMAN: Thank you. Thank you. Thank you very much. Marc, what do we do?

MR. LEBLANC: Well, we can resume at one o'clock. I'll just have to bring everything up, or at 1:30. But I think we can start at one.

THE CHAIRMAN: Okay. So we will -- is everybody ready and available at one o'clock?

MR. LEBLANC: I don't have confirmation but they are available now for the scan.

THE CHAIRMAN: Okay. So we will reconvene -- we'll reconvene at one o'clock.

Thank you.

--- Upon recessing at 11:56 a.m./
L'audience est suspendue à 11h56
--- Upon resuming at 1:05 p.m./
L'audience est reprise à 13h06

6. Update on an item from a Previous Commission Proceeding

6.1 CNSC staff update of the event
Involving check sources left at
The CNSC head office

THE CHAIRMAN: Okay. Good afternoon. We are continuing with the next item on the agenda is an update from CNSC staff on the event involving check sources left at the CNSC head office. This is outlined in document 13-M7. And before we begin, I understand that CNSC staff has a representative joining us via videoconferencing -- teleconference from Mississauga -- Mississauga. Mr. Denhartog, can you hear us? Mississauga?

Okay. Technology is not working. They didn't know it was going to start at one? Anybody, they know that? Okay. Well, somebody send him an email.

So first, I guess I'll turn the floor to Mr. Régimbald for his presentation. And then I understand that Dr. Patsy Thompson will make a presentation. Okay.

13-M7
Oral presentation by
CNSC staff

MR. JAMMAL: Ramzi Jammal for the

record. Just before I pass it onto André, Sir we are sitting before you as a demonstration of independence of the Commission from staff. So you are seeing here the section that is responsible for licensing and compliance and my colleague, Mr. Jamieson, who is the licensee.

So this is the first time ever that staff is appearing before the Commission in such a manner. I will pass on the floor to Mr. Régimbald.

MR. RÉGIMBALD: Merci Ramzi. Bonjour Monsieur le Président, membres de la Commission. Je m'appelle André Régimbald, je suis le Directeur général responsable de la règlementation des substances nucléaires.

Nous vous présentons aujourd'hui une mise à jour de l'événement des sources de contrôle de faible risque qui ont été laissées par inadvertance dans une salle, à l'administration centrale de la CCSN, le 26 juin 2012, ainsi que des actions entreprises par la Commission pour y remédier.

With me today, beside Mr. Ramzi Jammal, Executive Vice-President and Chief Regulatory Operations Officer, I have Mr. Peter Fundarek, Director of Nuclear Substances and Radiation Devices Licensing Division. Mr. Henry Rabski, Director of Operations Inspection Division and we were supposed to have Mr. Denhartog from

Mississauga, if he joins us later by videoconferencing.

THE CHAIRMAN: I've just been informed that he is now connected. Can you hear us Mississauga? Hello?

MR. DENHARTOG: Yes, I can.

THE CHAIRMAN: Okay. We can see you now.

MR. DENHARTOG: Thank you.

THE CHAIRMAN: Magic happens. Right.

MR. RÉGIMBALD: And there is also Mr. Sylvain Faille, Director of Transport Licensing and Strategic Support Division.

THE CHAIRMAN: Okay. Thank you.

MR. RÉGIMBALD: Mr. Terry Jamieson, Vice President, Technical Support Branch and Dr. Patsy Thompson, Director General of Directorate of Environmental and Radiation Protection Assessment, as Mr. Jammal pointed out are here as well to present additional information relating to this CMD.

I would like to begin by explaining what happened on July 17th, 2012, CNSC staff recovered three small low-risk radioactive check sources containing caesium 137 at CNSC head office in Ottawa.

The check sources, which belong to the CNSC, were used by CNSC staff for a demonstration session to summer students on June 26th, 2012. The demonstration involved check sources being purposely hidden and students

finding them with geiger counters. Three of the check sources were accidentally left behind and remained undetected until July 17th, 2012 when other CNSC staff discovered them while preparing the room for a meeting.

The amount of radioactivity from the caesium 137 and the three check sources is of low risk since it is approximately the same as that found in household smoke detectors. The sources themselves are contained inside a sealed capsule, no bigger than a loony and are designed to be safely handled by hand.

Check sources are mainly used for verifying that radiation detection instruments are functional. That is to confirm that they are capable of detecting radiation. Since these sources present low risk, most of them, like the three sources involved in the event, are exempt from licensing in accordance with CNSC regulation.

THE CHAIRMAN: Can I stop? Is your presentation -- why is your presentation not -- right.

MR. RÉGIMBALD: Okay. So --

THE CHAIRMAN: The whole purpose of the webcast --

MR. RÉGIMBALD: So I was saying that the sources present low risk and most of them are exempt from licensing in accordance with the regulation.

So that means that any member of the public

can own such check sources without a CNSC licence.

Despite the fact that these check sources are low risk and present no harm to people or the environment, we did not apply the same regulatory rigour internally that we require of other licensees as it will be explained in this presentation.

As part of its regulatory functions, the CNSC conducts certain activities that are regulated under the *Nuclear Safety and Control Act* resulting in the CNSC being self-regulated.

To carry out this work, the CNSC holds two licences that are issued by a designated officer in the Directorate of Nuclear Substance Regulation following well-established processes for licensing and compliance verification.

These two licences are a Class 2 nuclear facility license expiring on September 30th, 2015, for its gamma irradiator located at the CNSC laboratory in Ottawa and a nuclear substance and radiation device licence expiring on April 30th, 2013, which is a single licence that encompasses a variety of activities such as laboratory studies, possession and use of sealed sources and use of liquid scintillation counters that are conducted at the CNSC laboratory in Ottawa and at CNSC offices in other locations across Canada for compliance

verification purposes and training.

For the purposes of these two licences, CNSC management has separated the role of licensee within its Directorate of Environmental and Radiation Protection and Assessment, or DERPA, as I will refer to in this presentation from the role of regulator, within its Directorate of Nuclear Substance Regulation, or DNSR. The CNSC laboratory is the entity responsible as the licensee for the safe conduct of the activities under both CNSC licences. CNSC staff in other directorates also used the nuclear substances and radiation devices under the nuclear substance license to conduct training activities for first responders such as fire fighters and police officers.

DNSR, as the regulator, should apply the same approach to licensing and compliance verification of these activities as it would with all other licensees. As such, we expect licensees who use check sources to demonstrate a consistent application of safety requirements for their entire operations under their licence. However, this event showed that the CNSC did not demonstrate such consistency in applying safety programs under its own licence during the handling of the three check sources that led to the event.

When the three check sources were discovered in the CNSC meeting room on July 17th, 2012,

the Executive Vice-President and Chief Regulatory Operations Officer of the CNSC, Mr. Ramzi Jammal, directed laboratory staff to immediately cease operations involving the use of nuclear substances and equipment under both CNSC licences and that operations would remain restricted to the possession and storage of nuclear substances and equipment until further notice.

The laboratory began to retrieve all sealed sources under its control and by mid-August, it had retrieved all of the sources other than those at CNSC site and regional offices. While the event was of low risk and presented no harm to people or the environment, the CNSC decided to conduct an independent internal investigation into the matter in order to determine if the event was an isolated occurrence or if indicated something more systemic in nature.

The investigation aimed to examine the circumstances of the event, identify root causes and/or contributing factors and identify any program or procedural improvements to prevent the reoccurrence of similar events that might involve nuclear substances of greater risk.

It is important to note that this independent, internal investigation was led by a CNSC staff who does not work for either of the directorates

associated with the operation of the CNSC laboratory or the regulatory oversight of it.

The investigation team found that the CNSC, as the licensee, responded to the event in a timely manner and took adequate actions to ascertain that there was no risk to staff or the public at any time. The investigation team confirmed that no person was placed in a position of harm or risk as a result of the demonstration or during the three-week period that the check sources were unaccounted for.

On July 23, 2012, CNSC inspectors within DNSR also conducted an inspection at the CNSC laboratory to verify licensee compliance with the *Nuclear Safety and Control Act*, their regulations and the nuclear substance and radiation device licence. Issues relating to source inventory control were identified during this inspection.

L'équipe d'enquête et les inspecteurs ont cernés les causes fondamentales de l'évènement. Premièrement, le contrôle procédural exercé par le titulaire de permis à l'égard du stock de sources radioactives et des activités de formation était insuffisant. On a constaté que la CCSN, en tant que titulaire de permis, avait exercé certaines de ses activités sans disposer de procédures suffisantes en matière de responsabilisation et de contrôle des sources

radioactives pour la prestation d'exercices de formation.

Deuxièmement, les procédures de travail du titulaire de permis n'étaient pas toujours respectées. L'enquête a révélé que la CCSN dispose de procédures pour le contrôle du stock de sources radioactives, y compris une exigence pour la tenue de dossiers. Cependant, le personnel n'a pas toujours respecté ces procédures.

Et troisièmement, la surveillance des activités autorisées exercée par la direction de la CCSN n'était pas efficace. On a constaté que les voies hiérarchiques de la CCSN qu'il faut suivre pour les activités autorisées cadraient mal avec les responsabilités fonctionnelles définies par les permis. Aucun responsable de la CCSN ne semblait avoir le contrôle opérationnel absolu des activités autorisées. Le personnel de la DRSN a également examiné le processus de renouvellement de permis utilisé en 2008 pour la délivrance du permis actuel et a confirmé que les mesures prises au moment du renouvellement n'avaient eu aucune incidence sur l'évènement.

En se fondant sur les conclusions de son enquête, l'équipe a présenté huit recommandations à la direction de la CCSN visant à corriger les lacunes relevées. C'est à dire renforcer les procédures de contrôle des sources radioactives; augmenter la

surveillance de la direction et l'auto-vérification des activités visées par le permis; se conformer aux documents d'application de la réglementation, numéro GD-371, de la CCSN intitulé "Guide de présentation d'une demande de permis, Substances nucléaires et appareils de rayonnement"; changer de responsable de radioprotection; améliorer les procédures de tenue des dossiers -- pardon, des documents réglementaires; avoir un mandataire unique pour les deux permis de la CCSN, ce qui signifie qu'un seul employé de la CCSN serait responsable des deux permis; examiner et améliorer le plan de formation et les procédures d'utilisation de sources radioactives; et finalement, examiner le programme et les procédures concernant les activités de formation des premiers intervenants.

Ces conclusions et recommandations ont été présentées à la direction de la CCSN en août 2012. Également en août 2012, la Direction de l'évaluation de la protection environnementale et radiologique a donné suite aux conclusions de l'inspection du 23 juillet. Plusieurs problèmes ont été réglés jusqu'à présent, mais d'autres seront abordés dans le cadre du processus de renouvellement du permis. En septembre 2012, la DEPER a présenté les grandes lignes de son plan d'action en vue de donner suite à chaque recommandation de l'enquête et

proposer 21 mesures correctives ainsi qu'un plan de mise en œuvre pour ces mesures.

Plusieurs éléments de ce plan ont été examinés et approuvés par le personnel de la DRSN, tandis que d'autres font toujours l'objet d'un examen, comme l'expliquera en détails Mme Thompson dans sa présentation. La DRSN a signalé à la DEPER que toutes les mesures correctives devront être appliquées à sa satisfaction avant le prochain renouvellement de permis en avril 2013. De plus, la présentation d'une demande de permis doit être conforme aux attentes en matière de respect de la réglementation, énoncé dans le document RD/GD-371 de la Commission.

En ce qui concerne les prochaines étapes, le permis de substances nucléaires et d'appareils à rayonnement de la CCSN prend fin le 30 avril 2013. La DEPER a présenté une demande de renouvellement de permis à la DRSN le 14 décembre 2012. Cette demande fait actuellement l'objet d'un examen pour vérifier sa conformité aux exigences réglementaires et aux documents de l'application de réglementation numéro 371. Le processus de renouvellement de permis devrait être terminé le 1er avril 2013 afin de donner suffisamment de temps au fonctionnaire désigné de la DRSN de prendre une décision à l'égard du renouvellement du permis. La communication se

poursuit entre la DRSN et la DEPER pour veiller au respect de ces exigences et de cet échéancier. La DRSN continuera à exercer une surveillance réglementaire des activités réalisées dans le cadre des deux permis de la CCSN. La DRSN appliquera la même approche qu'à celle des titulaires de permis en plus d'être tenue aux mêmes normes. De plus la DRSN possède une expérience considérable en matière de règlementation en prenant en moyenne plus de 1,700 décisions de permis par année.

La DRSN dispose aussi de mesures réglementaires nécessaires pour exercer une surveillance efficace des 2,500 permis qu'elle gère dans l'intérêt de la santé et de la sécurité des travailleurs et du public et de la protection de l'environnement.

La DRSN peut également se prévaloir d'une vaste gamme d'options réglementaires et d'un nombre suffisant d'outils d'application de la conformité pour veiller à ce que les titulaires de permis respectent les attentes réglementaires.

L'évènement du 26 Juin 2012 comportait peu de risque, mais il a appris à la Commission canadienne de sûreté nucléaire qu'elle doit exiger que la même réglementation rigoureuse qu'elle applique aux activités d'autres titulaires de permis soit appliquée à ses propres activités autorisées internes.

Grâce aux améliorations continues visant à renforcer les processus réglementaires de la CCSN, un tel incident ne devrait plus se reproduire.

Par exemple, le personnel de la DRSN responsable de la délivrance de permis et de la conformité collabore étroitement afin de déterminer rapidement quel titulaire de permis, le cas échéant, ne respecte pas leurs obligations réglementaires.

En novembre 2011, la CCSN a publié le document d'application et de réglementation RDGD-371. Ce document contient des informations détaillées et des directives concernant les attentes en matière de respect de la réglementation de la CCSN visant la présentation de demandes de permis de substances nucléaires et d'appareils à rayonnement.

La DRSN a récemment mis au point des critères techniques précis et clairs en fonction desquels les demandes de permis et les renseignements présentés par un demandeur de permis sont évalués.

Au cours des dernières années les inspecteurs ont augmentés le nombre d'inspections sur le terrain et ils se servent d'avantage des ordres et d'autres mesures d'application de la conformité pour que les titulaires de permis comprennent et respectent leurs obligations en matière de réglementation.

Enfin, tout autre problème lié aux activités réalisées dans le cadre des permis de la CCSN sera signalé à la direction de la CCSN en temps opportun.

In conclusion, the event of June 26th, 2012 identified areas of concern within the CNSC as a licensee, even though this event involved low risk radioactive check sources.

As a result, the Directorate of Environmental and Radiation Protection Assessment as a licensee submitted a corrective action plan that is currently under review by the Directorate of Nuclear Substance Regulation as the regulator, and so far DNSR is satisfied with the progress made by DERPA to close these items.

The remaining items are expected to be closed during the licence renewal review process.

At this time and until the corrective action plan is fully reviewed and accepted by DNSR and implemented by DERPA, the activities conducted under CNSC licences should remain restricted to the possession and storage of nuclear substances and radiation devices.

However, the use of nuclear substances and devices by the laboratory and other CNSC staff relating to regulatory compliance activities, for example, calibration of instrumentation and evaluation of field samples are

allowed to continue.

DNSR will continue to track the progress of the actions of the CNSC to ensure the effective implementation of the approved correction plan.

DNSR will apply the same regulatory rigour internally in respect of activities conducted under the licensees -- I'm sorry, under the two CNSC licences as we require of other licensees.

DNSR will also inform the CNSC's Operations Management Committee of any issues that would require CNSC attention at the Senior Management level.

Finally, DNSR will report back to the Commission on any issues through regular annual industry reporting.

Ceci complète ma présentation. Je cède maintenant la parole à Madame Thompson et Monsieur Jamieson. Merci.

13-M7.A
Oral presentation by
CNSC staff

DR. THOMPSON: Bonjour, Monsieur le Président, Mesdames et Messieurs les commissaires. Mon nom est Patsy Thompson. Je suis la Directrice générale de

la Direction de l'évaluation et de la protection environnementales et radiologiques.

Je suis accompagnée par Monsieur Terry Jamieson who is the Vice-President of the Technical Support Branch. I also have with me today Mr. Yani Picard who is the Radiation Physics Specialist, as well as Mr. Slobodan Jovanovic, a specialist in analytical chemistry, both of whom work -- are senior staff at the CNSC laboratory.

As of October 26th, 2012 I became the applicant authority for the CNSC Consolidated Uses licence and Mr. Yani Picard became the Radiation Safety Officer for that same licence.

During this short presentation, I will outline the immediate actions taken as a result of the incident as well as review the status of the implementation of the corrective actions that have been identified to prevent a reoccurrence of the event or of similar events.

As stated earlier by Mr. Régimbald, the three check sources obtained from the CNSC laboratory for orientation training were found on July 17, 2012.

On July 23, the DNSR Inspector conducted an inspection at the laboratory. This slide summarizes the immediate actions taken by DERPA in response to this

event.

Under this licence there are 12 locations where radioactive sources can be found on a permanent basis.

Radioactive sources are also used in various locations across Canada for training purposes. The laboratory is the primary location for this licence.

Between July 19 and August 16th, 2012 radioactive sources were either returned to the laboratory or the inventory of sources at each location confirmed. All sources used for training were returned to the laboratory during this period.

A single inventory was created by consolidating the six existing inventories. This was completed on July the 27th, 2012.

A physical reconciliation of the inventory of sources at the laboratory was completed on August the 16th. Furthermore, each radioactive source was barcoded to facilitate inventory control and verification moving forward and this was also completed on August the 16th.

The implementation of a barcode system represents a best practice and generally exceeds methods of inventory control used by other licensees of this type.

Procedures and forms describing all steps necessary to maintain unbroken control and accountability

of nuclear substances at all times were drafted and implemented. An electronic request form supporting this procedure for use by all CNSC staff requiring radioactive substances from the lab has been put in place since September 7th, 2012.

On August the 14th, we conducted an internal review, or a self-assessment, of compliance with regulatory requirements for our licence use type. This information -- the information from the self-assessment -- confirmed the findings of the July 23 DNSR inspection.

With these immediate actions DERPA staff secured and established control over all radioactive sources at all locations listed on our licence and implemented procedures to ensure that moving forward loss of inventory control would not reoccur.

In addition to taking immediate actions, DERPA developed a detailed corrective action plan to address all items in the July 23 inspection rated as C or D, or below expectations. This corrective action plan was submitted to DNSR on August the 31st. The corrective action plan will be fully implemented as described by Mr. Régimbald by April 1, 2013 to support the new licence.

However, it should be noted that key procedures and changes to management oversight and management of radiation safety have already been

implemented. Specific actions will be discussed in further detail in the next slides in relation to the recommendations of the independent investigation report.

Earlier in today's presentation, Mr. Régimbald presented the eight recommendations coming out of the independent investigation report. These are listed here. You will see that the first one in red speaks to inventory control and we will not further discuss this as it was presented -- our actions in relation to inventory control were presented with slide two.

The eight recommendations covered the areas of inventory control, orientation and training activities, management of radiation safety and management oversight, compliance and inspection, and documentation and licence application.

The independent investigation confirmed the findings of the DNSR inspection that procedures were either missing or not being followed and there was a general lack of accountability for the activities being carried out under this licence.

This situation is clearly unacceptable and corrective measures have been put in place to bring our licence documentation, conduct of oversight of licence activities up to the standard of the CNSC expects of all its licensees.

The corrective action plan addressing the eight recommendations of the independent investigation report builds on the corrective action plan developed to address the DNSR inspection report.

The next four slides highlight the main actions being implemented to address the investigation's eight recommendations. As I stated earlier, we will not speak to inventory control again as all the actions were implemented as of September 7th.

This slide speaks to issues related to the recommendations on training using radioactive sources and this includes training provided by CNSC staff for CNSC staff and one example was staff orientation, and there's also regular radiation protection training of staff that requires the use of sources, and also training provided by CNSC staff from the Emergency Management Programs Division for first responders across Canada.

The first action is in progress and involves several divisions within the CNSC working together to develop formal training plans for the use of radioactive sources. As a precautionary measure, no radioactive sources will be made available for any training unless a formal training plan is in place identifying the training objectives and whether or not these objectives can be achieved without radioactive

sources.

Procedures related to the second item, which is development of inventory control and contamination control, this item has been submitted to DNSR for approval. Once again, no sources are being allowed out of the lab until these procedures have been approved or implemented and staff from the Emergency Management Programs Division have been training on their use.

It should also be noted that DERPA is looking into training systems using virtual sources that could be used to meet training objectives for both internal training as well as training of first responders. Such a system would eliminate the use of radioactive sources for training purposes and would, as an added benefit, reduce radiation doses to CNSC staff conducting first responder training.

The inspection and investigation reports identified a number of findings pointing to the lack of authority of the CNSC consolidated uses licence Radiation Safety Officer, as well as to the lack of procedures or unclear or inadequate procedures. The Applicant Authority identified in the licence was not well aligned with the management authority responsible for the activities of the laboratory.

The following changes were effective as of October 26, 2012. On that date I became the Director -- as the Director General of DERPA, I became responsible for the CNSC licence as the Applicant Authority as I have the level of authority necessary to ensure that resources are put in place to meet our obligations under the licence. Mr. Yani Picard, the laboratory's radiation physics specialist, became the Radiation Safety Officer for this licence as well. Mr. Picard is also the RSO, the Radiation Safety Officer, for the CNSC Class II facility licence. Mr. Picard is a senior staff member at the laboratory where most of the activities under the licence take place. Mr. Picard has been certified by the CNSC and, as such, is fully qualified to hold this position.

The planned implementation of the system of internal permits for site and regional offices listed on the licence, as well as temporary permits for the use of sources for training and other short-term uses is another improvement to ensure that the Radiation Safety Officer will have the authority and the mechanisms to enforce full compliance with the licence.

The system -- the procedures supporting this system form a part of our licence renewal application and are planned to be in place when the new licence comes into force.

The investigation determined that self-assessments and peer reviews should be conducted to ensure full compliance with current regulatory requirements prior to re-licensing. As mentioned earlier, both the inspection and investigation pointed to the lack of procedures in certain areas. Our review of licence documentation identified the need to develop and implement new procedures to strengthen our Radiation Safety Program to control all activities under this licence. This updated program includes procedures for the three items listed on this slide; internal reviews and self-assessments, management reviews, corrective and preventive actions. The updated Radiation Safety Program also includes procedures and documentation for organization and management, document control, control of records, as well as personnel qualification and training.

These procedures have been submitted to DNSR for approval but it should also be noted that to fill the gap identified as a result of the event, they have started to be used.

Again, both the inspection and investigation identified incomplete documentation of records related to the licence activities and the procedures to support licence activities.

As mentioned in relation to the previous

slide, procedures for control of records and document control have been developed and are being implemented. All radiation protection procedures dated March 2008, the date of the last renewal application, were reviewed and the gap analysis against RDGD 371, Licence Application Guide, Nuclear Substances and Radiation Devices was conducted and completed in early October. A licence application aligned with RDGD 371 containing all required procedures was submitted to DNSR on December 14, 2012.

As highlighted throughout this presentation, both the inspection and the independent investigation identified unacceptable practices and a general lack of accountability. As the Director General responsible for DERPA and for the CNSC laboratory, I took responsibility for the development and implementation of the corrective action plan soon after the event. The inspections and reviews showed that the situation leading to the event was not new but that the status quo was clearly not acceptable. Change was needed and I saw this event as an opportunity for improvement and for implementation of best practices.

As in other organization, changes are difficult and require significant commitment from all levels of the organization involving this licence activity.

Using the event and the results of the inspection and of the investigation, Dr. Said Hamlat, the Director responsible for laboratory, and I engaged senior staff for the laboratory and we worked diligently to develop and implement corrective action plan. As of October 26, 2012 I was designated the Applicant Authority for this licence, and as mentioned earlier, Mr. Yani Picard was designated as the Radiation Safety Officer.

These changes and the recently upgraded Radiation Safety Manual aligned with the new regulatory requirements RDGD 371 will ensure a high level of radiation safety moving forward.

With comments from DNSR on our licence application, we will finalize all procedures and train staff on these procedures. The internal permit system described earlier as a best practice is the best practice that will be introduced at licence renewal. We also plan on having an audit done by an external third party of our Laboratory Radiation Safety Manual and of compliance with the CNSC’s regulatory requirements.

The results of this audit will be used to identify opportunities for further improvement and also to identify the focus of our self-assessments for next fiscal year, for fiscal year 2013-2014.

The laboratory staff also, under the

leadership of Dr. Hamlat, has begun the work necessary to support the accreditation of our laboratory to the ISO 17025 standard. The implementation of the upgraded Radiation Safety Manual, as well with the many quality management procedures it now contains, as well as the laboratory accreditation to the ISO standard will enhance the culture of accountability and continuous improvement at the laboratory. This should ensure a high level of safety moving forward and prevent reoccurrence of the events of last summer.

This ends my presentation and we're available to answer your questions.

THE CHAIRMAN: Okay. Thank you.

Let's open the floor for questions and we'll start with Monsieur Tolgyesi.

MEMBER TOLGYESI: Merci Monsieur le Président.

I am concerned with this event. I'm quite sure you are also, everybody. I understand and I agree that there was no risk to the health, nor safety, nor of public or staff. However, I am concerned that it happened to CNSC, an authority to designate and to regulate, control, and impose corrective actions if deficiencies are discovered or noted in matters, or in the field, of nuclear safety.

I feel that exercise, really what was you were doing was really simple. Bring and hide some specific number of samples or sources, use devices to discover them. If not located or found, recover them by the person in charge of hiding or placing them before, and bring all samples back to the storage and complete a physical reconsideration -- reconciliation. That's normal way of doing business, I think, not only in our nuclear devices, but any other industry.

It is evident that we are in the presence of non-rigorous practices and ways of conducting and controlling activities. I appreciate the DERPA took immediate corrective action's planned to remediate deficiencies. This being said, I have maybe a few questions.

The practice was in June 26th. You discovered the sources in July 17th, which is about close to three weeks later. How many sources were brought to this exercise from laboratory?

DR. THOMPSON: Patsy Thompson for the record.

My recollection is about 15 sources were used during the training exercise and I agree with your comments that, you know, there were -- several problems arose in both planning the training exercise. Essentially

putting sources in hiding places and not making sure you actually know where you've put those sources. That was one problem.

The other problem that you've identified is that it took three weeks before sources were found and so there were clearly deficiencies in the procedures in place to both make sure that you know the number of sources you are giving someone and you also know the number of sources that are being returned to the lab. So those were two areas of -- where there are clearly gaps and unacceptable practices and the actions that the lab took in terms of, you know, the bar-coding, inventory control, establishing procedures, electronic forms to request sources with dates for returning them, the requirement to actually account for the number of sources coming in and going out, all these procedures are now in place and are being followed. But clearly, the fact that they weren't in place in June and July is not acceptable and it's not something we would accept as an example of good regulatory oversight.

MEMBER TOLGYSEI: You are saying that the designation of radiation physics specialist as radiation safety officer. How you think it would change? How it will be impact in the process, that it will be streamlined, so that it will not happen again?

DR. THOMPSON: Patsy Thompson for the

record.

Clearly, there are two changes that will make the management oversight and oversight of radiation safety more robust. Mr. Picard is a qualified radiation safety officer. He's been certified by the CNSC, but also he has the level -- his position is at a level where he can, if his colleagues don't comply with requirements, he will have the required authority to enforce those requirements. We've also put in place an internal -- we will be putting in place an internal permit system whereby this system, Mr. Picard will have the mechanism to enforce requirements.

Also, the fact that I am now the licence applicant and I'm directly responsible for the laboratory. Mr. Picard and I have -- we -- the organizational structure for the lab licence has Mr. Picard directly in line with myself, so that any issues that he has with any areas of non-compliance, he can report to me and he has direct access to me. So it's the implementation of both those changes that will make compliance much more effective.

MEMBER TOLGYESI: Merci Monsieur le Président. I think we have a similar question, so I will wait.

THE CHAIRMAN: Okay. But just to piggyback

on this, so what is in the hierarchy -- organizational hierarchy -- so what is the role of the director of the lab?

DR. THOMPSON: Patsy Thompson for the record.

The director of the lab has direct responsibility for managing the staff, making sure that the services are up to the technical standards. But in terms of the licence activities and the radiation safety, it is Mr. Picard who is the radiation safety officer. He's the signing authority on the licence and I'm the applicant authority.

THE CHAIRPERSON: So will he be ---

DR. THOMPSON: The director ---

THE CHAIRPERSON: Will he be the one that's ---

DR. THOMPSON: The director of the lab ---

THE CHAIRPERSON: Will he be the one that actually controls the inventory ins and outs, and signatures and all of that stuff? Who does that?

DR. THOMPSON: I'll ask Mr. Picard to explain the process that has been put in place and how the accountability will align.

MR. PICARD: Yani Picard.

Yes, it's correct. I'll be doing the

oversight. We have now a database and our staff, who are authorized to transfer licences from one location to the other, are also -- have access to the database. So anyone who has to, like -- there's also a form to have -- that you will have to fill to request for a source. One of the staff will fill the request, update the database accordingly, make sure that the user is authorized to use the source in question, and as the radiation safety officer, I make sure that people are following all the procedures we have in -- related to the licence.

THE CHAIRMAN: I'm just trying to understand. So nobody can take a source without somebody else saying it's okay?

MR. PICARD: That's correct. I'm the only one having access to the vault with one of my colleagues. So there's no sources that are going to go out of the vault without me or my colleague, my backup, knowing about it.

THE CHAIRMAN: Okay. Thank you.

DR. THOMPSON: Perhaps, Mr. Binder, if I could just clarify or add to what has been said?

The laboratory management structure has both a management structure for the licence and a management structure for the day to day activities of the lab. That includes the licensed activities. But in terms

of accountability for radiation safety for the licence, it is Mr. Picard and I and Mr. -- Dr. Hamlat is responsible for all other aspects of the lab.

Said Hamlat, essentially, when the event occurred, took full responsibility for the actions. He was involved with the lab staff, you know, as soon as we found out about this event and worked with the lab staff and myself and took the lead, formed the development of the corrective action plan. And so up to October, when the changes were made, he was fully involved in the licence activities and the corrective actions moving forward.

But at this stage, we've essentially separated the responsibilities so that there's more direct accountability between the radiation safety officer and the applicant authority and it's my understanding it aligns better with the expectations from our regulator, the DNSR.

THE CHAIRPERSON: Monsieur Harvey?

MEMBER HARVEY: Merci, Monsieur le Président. J'aurais un commentaire et peut-être une question ou deux. Commentaire, je suis un peu celui de mon collègue en disant que c'est surprenant puis même renversant d'arriver devant un fait comme ça. C'est un -- je suis bien conscient que c'est un petit évènement qui a

pas de conséquence sur la santé et sécurité, mais qui a des conséquences sur la Commission elle-même et sur la -- qui a un impact, je dirais, important sur la crédibilité puis la confiance que le public peut avoir envers la Commission et même que nous on peut avoir. Et ça m'amène à dire que souvent, on pose des questions qui peuvent vous sembler banales, parce que vous êtes des experts, c'est très complexe, mais on sait qu'à la longue, en travaillant sur un même sujet pendant des années, on en oublie parfois les bases. Et ce qui m'amène à dire ça, c'est une phrase on page 10 of the staff presentation when we read the event of June 26th.

"Although a low risk has taught the CSNC to apply the same rigour internally as we require for the licensees..."

Je pense pas qu'il aurait fallu attendre ça pour que -- je pense que ça, c'est quelque chose qui est vrai en soi et qui est impératif. Fait que c'est quand même surprenant, et ce qu'on doit espérer de ça, c'est qu'il y a plus d'autres cas comme ça qui reviennent devant la Commission. Parce que à chaque fois, bien bâtir sa crédibilité, c'est très long, la perdre, c'est très court. Donc c'est le sens de mon commentaire.

Ma question maintenant. C'est -- vous avez mentionné tantôt que un certain nombre d'activités avaient repris. Par contre, il y en a encore qui sont arrêtées.

Quelles sont celles qui sont arrêtées et est-ce que ça a un impact quelconque sur soit la formation, soit le monitoring, sur les activités de la Commission?

MR. RÉGIMBALD: Je vais commencer par expliquer les activités qui sont arrêtées -- pardon, qui sont autorisées à continuer parce qu'elles sont plus simples à expliquer. Ce sont les activités qui sont liées à notre vérification de conformité avec les autres titulaires de permis. Donc ce que les inspecteurs ont besoin dans l'exercice de leurs fonctions, par exemple, et aussi l'évaluation d'échantillons que les inspecteurs prennent sur les sites et qui sont envoyés aux laboratoires pour analyse. Alors ces activités là sont autorisées à continuer.

Les activités qu'on a cessées sont les activités, par exemple, de formation aux premiers répondants avec des sources et aussi pour des besoins d'étude dans le laboratoire qui ne sont pas liées à les -- aux activités exercées par nos inspecteurs. Donc toutes les activités de conformité continuent. Peut-être que -- if Peter can elaborate on ---

MEMBER HARVEY: Est-ce qu'il y a un backlog de constitué, ça a été arrêté combien de temps les activités?

MR. RÉGIMBALD: Les activités, aussitôt

qu'on ---

MEMBER HARVEY: Qui maintenant sont permises.

MR. RÉGIMBALD: Oui, pardon. Lorsqu'on a découvert l'évènement, Monsieur Jammal a ordonné au laboratoire de cesser toute activité sauf celles qui sont liées aux activités exercées par les inspecteurs dans l'exercice de leurs fonctions.

MEMBER HARVEY: Celles-là ont jamais cessées?

MR. RÉGIMBALD: Non.

MEMBER HARVEY: O.k. J'ai mal compris, merci.

THE CHAIRMAN: But you’re not -- so for example, for first responders, if they need some further education, this is not stopped, is it?

MR. RÉGIMBALD: Yes, it is.

THE CHAIRMAN: But I mean, that defeats the whole purpose here, isn’t it?

DR. THOMPSON: Patsy Thompson, for the record. The sources have started to be loaned from the lab to the DNSR inspectors and other inspectors requiring sources to check instruments once the procedures were in place for control and the process we described earlier using the electronic request form and all the information

that needs to be controlled. And that procedure was in place on September 7.

What hasn't yet resumed is first responder training. To date, the procedures needed to support source control and contamination control and decommissioning after an exercise have not been acceptable -- have not been accepted. There are still deficiencies in that procedure. And so training of first responders -- some activities were postponed in the fall. There was an activity that was scheduled to take place in December and it actually took place but, with sources from another provider of sources, but not from the CNSC lab.

MR. JAMMAL: Just -- sorry. Ramzi Jammal for the record. I just want to confirm, concernant ta question, est-ce que ça a impacté ---

MEMBER HARVEY: Ça va, merci.

MR. JAMMAL: O.k., tu es correct. The first responders are being trained without the sources for now. So the training of the first responders is taking place without the actual sources being there.

MR. JAMIESON: For the record, Terry Jamieson. Just to be entirely clear, there's a range of options for training first responders. What has been stopped by CNSC is the use of CNSC sources for that training. Some training can go ahead without sources,

some training can go ahead using sources from other providers, where their own -- the licensees' own sources.

THE CHAIRMAN: Thank you.

MEMBER HARVEY: Okay, can the same problem arise with the -- when you get sources from other providers? You manage the same kind of sources.

MR. JAMIESON: Terry Jamieson. Regardless of the source -- of the sources themselves, the same level of care would be expected to be applied to all of them.

THE CHAIRMAN: Ms. Velshi?

MEMBER VELSHI: Thank you, Mr. President. Is this the first time that the CNSC has done an independent investigation of a sister department or has that happened before?

MR. RÉGIMBALD: To my knowledge, this is the first time that we conduct such an in depth internal investigation of our own activities.

MEMBER VELSHI: And did you consider bringing in an outsider -- someone outside the CNSC to be part of the investigation team?

MR. JAMMAL: Ramzi Jammal for the record. So to answer your question as pertaining to licence activity and laboratory, Madam Velshi, this is the first time that the CNSC has actually looked in depth in applying the rigor as we do for external licensees. This

issue is not -- is -- I mean, if I can say, it’s an embarrassing event. The event itself demonstrated that the functionality of the lab has changed. The control has not kept up with the changes of the lab. Even though it’s administrative in nature, it’s not something we’re proud of.

Yes, the question, has the CNSC conducted its self- assessment. From a regulatory oversight perspective to our programs, we did as pertains to licenced activity, but for the lab as a licensee, we did not. This is the first time where we brought in a team, even though independent of the licensing and operations. We brought in individuals actually. One of them is Mr. Mike Lemay who is trained root cause analysis, works for a different directorate.

Now you asked the question, did we ever bring someone external? Well, we did not do it yet, but the lab itself is undergoing an ISO certification process and they’re going to have a major examination being put on them by an external party. In addition, post-corrective action, for an audit to be of effectiveness, we believe that an audit to come in a few months post the implementation of the program and audit the implementation of the programs and the regulatory oversight of the CNSC.

In addition to this audit, and the

Operation Management Committee that's co-chaired by myself and Mr. Jamieson, will be reviewing the inspection reports arising from the lab activity. So we've added another layer of a reporting and reviewing of the activity of the lab. So yes, we will be bringing an external audit. And the external audits are going to be -- to be effective, it should evaluate the implementation of the program and review how things are being done.

DR. THOMPSON: Patsy Thompson. If I could add, early after the event, in August, we did discuss the relevance of bringing, at that time, an external third party to review our practices. Given the findings of the inspection report, the investigation report and our own self-assessments it was clear that, you know, the deficiencies that were identified were identified for everybody, so we didn't think there was value at that time to bring in a third party to find the same things.

What we have decided, at that time, was to put in place the corrective action plan, draft the procedures we needed to draft, submit our licence application, and once DNSR has reviewed and accepted our procedures, we will implement them, and before the licence renewal date, which is the end of April, our intent is to bring in a third party to confirm the implementation -- the appropriate implementation of the new radiation safety

manual, and all the procedures that have been put in place.

A lot of activity will need to be done in the next two months to train staff at the laboratory and other users of the licensed activities on the new procedures, and so we thought it would be more relevant to have the eye of an external third party at that time.

MR. JAMIESON: Terry Jamieson. And Madame Velshi, if I can add, it's not the first time though that we've done internal self-assessments. We've done that in conjunction, but prior to, the IAEA's IRRS mission to review the CNSC, which itself was an external investigation, and also subsequent to the NRU events of 2007, we brought in an external company to do an assessment.

MEMBER VELSHI: And the inspections that are done for other licensees that I point out to inspections, would you have expected those -- first of all, I don't even know if those inspections were done for the CNSC as a licensee, but if they had been, would you have expected those inspections to have identified these deficiencies?

MR. RÉGIMBALD: We conducted inspections of the lab in the past. These were type-two inspections, so looked at a snapshot, so parts of the operation, and there

were some issues associated with inventory control, but not to the extent that brings us to this situation.

Until the August 23 inspection, which was a bit more deeper, and identified clearly what the issues are, and we look at -- when we do inspections, we look at high-risk areas. For example, high-risk sources, were okay, but we didn't look at the lower-risk, such as -- like the check sources were not carefully, you know, reviewed during the inspections. So Henry Rabski is responsible for the group and can add some details.

MR. JAMMAL: Ramzi Jammal, for the record.

There are two things. You are raising -- the question is, okay, what did the inspectors do, and what did they do with the record of the inspection. And that's where the system failed, with respect to the follow-up and closures of the inspection findings. And that's the difference between -- the regulatory applied to the external licensee, versus what occurred in the lab. So the inspectors provided findings and the follow-up was not as rigorous as the closure.

Now, we can give all kinds of excuses, the lab moved, the lab expanded -- you know, change has occurred, but that's not an event that we can take lightly. So that's why the reports now, with respect to any inspections, will come to the OMC.

So there are multiple issues that the inspections were carried out -- even though the findings are low-risk in nature, and this is what I'd like to emphasize, they're administrative. We did no close them as we would have required of any other licensees to close, regardless of administrative or not. Some parts were closed, some parts were not closed, and that's where we're seeing the systematic -- systemic or systematic issues arising from the oversight, and those have changed.

MEMBER VELSHI: And I guess my question was -- it's fine, I mean I think you've covered findings not being closed. It was a question of the adequacy of the findings themselves, and have the inspections been robust enough, and, yes, I know the priorities are on the high-risk areas, but is there perhaps a need to look at some of these lower-risk areas in really great depth, at whatever frequency one thinks is appropriate, rather than waiting for an event like this to happen?

MR. RABSKI: Henry Rabski, for the record.

You're correct, our inspections would find those pointed-out needs for improvement, actions to be taken; they were not taken by the licensee.

MR. JAMMAL: It's Ramzi Jammal for the record. I've been reminded that the inspections, as the licensee will confirm, that the latest inspections were --

for the high-risk elements of the inspections, were satisfactory, fully satisfactory, and that's where we could not put the rigour with respect to the administrative aspects. |I will pass it on to Dr. Thompson, in order to give any more precision.

DR. THOMPSON: Patsy Thompson, for the record.

I just wanted to mention that the license, the current license, was renewed in 2008, and between 2008 and last summer, DNSR conducted two inspections of the lab using the inspection checklist that the inspectors use, and both of these inspections were satisfactory and fully satisfactory.

So on that basis we -- you know, not having self-assessments and management review procedures in place, we did not do our own self-assessments, which we should have, and we will, moving forward, but on the basis of the inspections there were no corrective actions needed.

MEMBER VELSHI: So I'm hearing a couple of different things, I think, because I'm hearing from you, inspection really didn't come up with any findings, they said it was satisfactory, whereas now we're finding some fairly significant findings, that you've overhauled your entire minutes system, frankly, right from the management

structure, to your training, to your procedures, to, you know, whatever.

And I guess I'm trying to get at what does this mean for the rest of the nuclear substances sector, and from an inspection perspective, not as a licensee perspective, as from an oversight perspective. But is there perhaps a need to look at things in great depth, even though it's low-risk, but that there are opportunities to significantly improve how we manage the business?

MR. JAMMAL: It's a very valid question. We, the CNSC, have undergone through the audit of external committee, the reviews. I believe they're audit or reviews, with respect to the inspections and enforcement activity, that has reviewed -- took a sampling of inspection reports from nuclear power plants, or actually, all facilities, from DNSR and the Class 1 facilities, and they reviewed the closure of the action as part of the enforcement action, with respect to the findings from the inspector's report.

So this was as recent as last year and this was presented to the external audit committee, where the enforcement action was reviewed, and the auditors looked at the inspection report itself, any open actions and the closure of the action items.

Now, those reports showed, regardless of the risk -- that means the corrective actions, and the findings, regardless of the risk, when an inspection was being carried out, that they were closed.

And the laboratory issues, you're correct to point the systematic, from the management, to the training, to the control aspect, is deficient. I mean, I don't have words to describe what the findings are.

We have an inspector, Mr. Paul Denharthog, on-line. He can explain to you the rigour of the inspections itself, but you want the assurances, how can we do this in a manner that we were evaluated. I can assure you that we were evaluated externally through the audit committee by external third-party auditors evaluating our enforcement action and the closure of actions.

Now, what is happening internally here in the lab, I -- I mean, I'm being very, very blunt and frank here -- is the authority of the person who was giving out the sources, from breaking perspective, from collegial aspect, from a control aspect. You know, it's someone with a higher rank would come and say, "I want to have this source out." They would take the source out and they go "will have the activity".

So that's where we, collectively, as a

licensee and an oversight, was not done at the rigour we would. If we were in the field, we will verify and check how the sign-out of the sources is being done.

Now, I'll have to pass on to our inspector who really visited the lab, Paul, and to really state, ok, so what is their action and what is different now than what we've done before with the lab?

MR. RABSKI: Before asking any clarity of the inspector, I'd like to respond to your question about whether we need to go further in depth and I think that's where the Commission member was going. As you know from our presentation this morning, we're a risk-based organization and we conduct our compliance on that basis, so that means we are focussing as we've decided in the high-risk with the anticipation of addressing our compliance program at the most -- the sources and substances and devices that pose the highest potential risk.

With respect to your -- from that approach, it works when you see that the most important sources are being managed properly. When we have events as we did in this case, and we've had many events in the past, what happens in those cases, where we do the snapshot type-2 inspection and we do that high-level look at the high-risk components of a program, we then look at that event and we

dissect that event. We look at what the licensee does in terms of an event analysis. What were the causes of that particular event as in this particular case and we, as the inspectors, review that.

If we're not satisfied with the actions that are taken, yes, we go into depth. We look at the procedures. We look at what the licensee did to try to identify causes and corrective actions and if we're not satisfied, we go in and we dig until we feel that the -- the licensee has responded adequately and the likelihood of a reoccurrence has now been essentially eliminated.

So that's one way where we do that follow up without investing, in just changing the way we do inspections totally and start drilling all the way down into the lower risks and all the other elemental things. Does it always work? No, but in this case, in terms of the follow ups and learning from what we have, it's something that we do. It's also looking across the board on repetitive things. If we see things that are repetitive, then we can incorporate those into our inspection, so we take that information, we take every event seriously.

We look for areas whether they're medium risk or not and we do the follow up, so that we don't -- we eliminate the reoccurrence and try to eliminate the

possibility of another event happening. That's an approach that we take to balance off the risk-based approach that we use for licensing in general.

MEMBER VELSHI: Thank you. That's extremely helpful. I really like and appreciate that answer. My last question is a lot of learnings here for the CNSC as a licensee. How are you planning on sharing this and particularly the best practices that are now getting implemented?

MS. THOMPSON: Patsy Thompson for the record. I'll be truthful. We haven't given thought to this. We have been focussed on getting our house in order. So, something we'll need to consider moving forward.

THE CHAIRMAN: That -- that begs another question. Who else is check sources or I mean, check source is a class by themselves, right? I think, one of the thing I understand from reading all this material is the check sources did not get the same respect that any other kind, let me use a loose word here, than, because it's so low risk kind of a play thing, nobody was taking it seriously, but as regulator we cannot afford not taking anything seriously. In fact, as a regulator, we almost should subject ourselves to a higher standard, if you like, of rigour, making sure of everything. But who else

is, if I -- if I recall university labs, professors, who else has check sources lying around?

MR. FUNDAREK: Peter Fundarek. There are a number of licensees across the country that use check sources, you are correct, of course. Hospitals, universities, anybody who has a radiation survey meter that wants to verify the operation as they're required to do, to verify the operation of the radiation survey meter from -- on a periodic basis. We all need a check source to -- to accomplish that.

There are high schools and other educational institutions across the country that have check sources available for demonstration purposes, things as innocuous as the -- the small radium sources used for cloud chambers and things like that for demonstrating radioactivity. Those are -- those are considered check sources.

Now check sources themselves are defined in Section 8.1 of the Nuclear Substances and Radiation Devices Regulations and there are specific requirements that a check source has to meet in order to meet the definition of a check source and it's things like being less than 1 microsievert per hour at .1 metre from the check source, less than 370 kilobecquerels in total activity if it's not an alpha-emitter and things like that

plus there's markings and design and construction criteria.

So if it meets all of those criteria, then the section 8.1 of the NSRD regulations allows for any person to possess those without a licence because it is deemed that the risk is so low from those. But again, there are -- there are such sources in the possession of many licensees across the country for doing that verification of survey meters and other instrumentation, just to verify that those are operational.

We certainly don't consider them play things. I -- I don't agree with that characterization ---

THE CHAIRMAN: Well, okay, but do you know that some of the university profs, I don't know why I'm saying this, but I remember that some of them were pretty sloppy putting them in a little drawer etcetera, et cetera, and that's why -- they're not taking it as seriously as we should. Is that correct statement or not?

MR. FUNDAREK: Based on my experience, I have 10 years of experience as the radiation safety officer for the University of Toronto. We took check sources very seriously and did not allow professors to put them in drawers and when sources like that - because prior to the change in the regulations in 2008, check sources were required to be listed as part of the -- the licence -

- were included as part of the inventory of the licence. There was no exemption for check sources per se, so they were required to be on the licences and any of those check sources that were lost or mislaid or for which the radiation safety officer could not account, they were required to file an event report with the CNSC to notify us of that loss.

THE CHAIRMAN: So the -- all the University of Toronto is a pretty good inventory, of inventory that DERPA is not developed to -- to control all the ins and outs of check sources.

MR. FUNDAREK: I can't speak to the inventory that's at the University of Toronto right now because I've been out of there for about 15 years, but at the time, it was, when I was there, we did have an excellent inventory.

THE CHAIRMAN: But like there's some respect of ---

MR. FUNDAREK: And they do have an internal permit system, yes.

THE CHAIRMAN: Okay, that's -- that's a good thing to know.

MR. REGIMBALD: We can ask Paul Denhartog to provide some information.

THE CHAIRMAN: Okay Paul, you're on.

MR. DENHARTOG: Thank you. Can you hear me okay?

THE CHAIRMAN: Yes.

MR. DENHARTOG: I think the -- the level of security that a licensee would apply to a check source is not necessarily driven by the activity of the source, but rather the purpose of the source. So, for example, if -- if there's a particular instrument that you use every day and you need to do an initial check with a source, you're going to make sure that that source is in a safe location so that you can find it when you need it. So my observation, certainly, and I can speak specifically on University of Toronto in agreement with Peter that they do in fact have a very rigorous control of check sources, and I could not say that check sources are more likely to suffer from loss of control than the higher activity sources.

THE CHAIRMAN: Okay, thank you. Good to know. Dr. McDill?

MEMBER MCDILL: Thank you. I think it's a little humbling for the Commission to -- to have to face this, but I think it's also good that our intervenors see that there is the capability to self-criticize department to department and that when there was a lack of safety culture - and I think this could be called the lack of

safety culture - we are very insistent on that in our proponents that there was action internally. I wonder -- is this a difficult question to ask, I wonder if I could ask if the reaction of -- of the staff when this happened was what one sometimes sees, you know, well, it's not that bad. There wasn't much risk. I don't see what you're getting your shorts in a knot about, did that happen or was there an immediate buy-in that change is required? I'm not sure who I'm going to address that too, maybe both. That's usually what we do.

DR. THOMPSON: Patsy Thompson, for the record. Since we're responsible for the licence, I'll start answering your question.

I would say that when I heard -- I was on vacation when someone called me at home to tell me about the event. I did not think this was amusing, and I did take this very seriously. I know, Mr. Binder, you made comments about, you know, this is a type of source that people can play with. But the reality is that the lack of procedures and the lack of accountability at the lab and the general interactions between staff at the lab and staff in regional and other offices requesting sources, the rigour wasn't there. And I think people all trusted that everybody was, you know, doing the right thing when there was no procedures and no process in place to make

sure that the right thing was actually being done.

Did everybody react to say, “Oh my God, we need to fix this”? I would say no. I think it took, you know, several weeks and a lot of discussions internally to get everybody on the same page. I think we have gotten there.

Certainly, the involvement of Caroline Purvis as the Director of the Radiation Protection Division and the involvement of Said Hamlat as the Director of the lab certainly helped in terms of moving the attitude of our staff forward. And you have, you know, Yani Picard and Slobodan Jovanovic here who have -- you know, are senior members of the staff at the lab, but also have experience working in DNSR. And with all of these individuals, I think we have gotten to a stage where people take this very seriously. And I would not require anything or expect anything but good practices and a safety culture and a culture essentially of taking responsibility and care for all the material that we have under our responsibility.

MR. JAMIESON: Terry Jamieson; I'd like to add something here, Dr. McDill.

I think in evidence of our safety culture, staff knew that this had to be reported. When it was discovered, it was reported right away; there was no fear

of reprisal.

THE CHAIRMAN: And of course it broke -- it became a fun story for the press to criticize the regulator itself, so it became an embarrassing kind of a story.

MR. JAMMAL: Just ---

THE CHAIRMAN: So everybody knew it required some attention.

MR. JAMMAL: Sorry, to add to your question is the staff took it very, very seriously and Paul can attest the fact that when I put the team together in order to review this investigation, again, the safety net was provided to staff in order to raise any issues and not just to focus on the sources, to review everything we do from the licensing compliance and go back to the historical aspect.

But even I was looking behind in the room here, we had another person from our audit committee, Michelle Langlois, Madame Langlois who was -- who had accompanied the inspectors and the investigation team to ensure that there was a “independence and full access.” So from safety culture, the findings, the cooperation of staff, I'm not sure if -- I saw her earlier today in the room, I'm not sure if she's still here, Madame Langlois, but she was part of the team from the Ethics and

Evaluation Committee of the CNSC, who's new to the organization. And she accompanied the inspector. But I will ask Paul if he has anything else to add.

MR. DENHARTOG: We did interview just about everybody we could meet with in the week or so following the inspection. And in fact, we were surprised at how candid people were in admitting to us that systems had failed, procedures were not in place, and that things had happened as they did. And in fact, it was a very open two-way communication and we felt that they were very free and willing to give the information even though it may have reflected badly on what they had done.

MEMBER McDILL: Do the procedures that are coming into place now align with other providers of checked sources that apparently are being used to help out with first responder training and things like that?

DR. THOMPSON: Patsy Thompson, for the record.

I'll provide some information and perhaps I'll - DNSR can confirm in terms of their experience in terms of licensing other groups.

With Mr. Picard and Mr. Jovanovic, we looked at what practices were in place by other similar licensees. And with that review, they made a recommendation to implement an internal permit system

which would ensure that all users of radioactive material from the lab have the required procedures in place or are authorized and have the required training. My understanding is that this is probably the element that will ensure, with the rest of the procedures in the system, that we have complete accountability.

MR. FUNDAREK: Peter Fundarek.

In November 2011, Directorate of Nuclear Substance Regulation published RDGD 371, the licence application guide for nuclear substances and radiation devices. This consolidated 10 different licence applications into one and also included substantial additional information for licensees with respect to CNSC staff expectations for their Radiation Protection Program. So this document now provides sufficient and extensive guidance for licensees to fill out their applications and to develop the radiation safety programs. We have received, as of December 14th, the application from the licensee with respect to the CNSC laboratory. The documents and the policies, procedures included in that application are currently under review and we're taking a fulsome look at them to insure that they meet all the requirements of the CNSC, they meet our expectations for inventory control as well as other aspects of the Radiation Protection Program.

MEMBER McDILL: Thank you. One more, Mr. President, and I guess to the two Vice-Presidents, are there other directorates with similar issues? Not check sources, but similar issues, perhaps imperfect alignment of management. That was one of the things that was identified here, it was some sort of a mismatch of management. Are there other directorates that should be looked at like this?

MR. JAMIESON: Terry Jamieson, if I can start.

I'd also like to add for general context that as much as anything, this was a failure to apply accepted practices and regular asset control, whether they had been check sources or lantern mantels or electronic means of simulating sources, they were not controlled adequately.

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

You're asking is there any other directorates. Two directorates, one is the technical specialist group under DERPA, and then the licence compliance group under DNSR, have had this experience. With respect to the regulatory framework itself, the CNSC has -- underwent the IRRS mission. The -- and other actually -- under the Audit and Ethics Committee,

underwent multiple evaluations and audit. To date, there is always room for improvement, we'll continue to improve. Is there the major gap issues we found in these processes? The answer is no. But every time an audit, we take it seriously with respect to enhance our capacity as a regulator and in order to ensure that we're always improving, and we cannot stop our improvement.

THE CHAIRMAN: Just to add, the Commission has a policy -- it's a government-wide policy actually -- that all programs, all activities should be on a cyclical review every five years. So you should have an audit plan, an evaluation plan that every activity and every program gets audited or evaluated. So the short answer is that every program will need some review, some of them more extensive, some of them less extensive. And hopefully, there will not be surprises. I think that's what the real question is we don’t like to be surprised with the unknowns.

MR. JAMMAL: Ramzi Jammal for the record.

Dr. McDill, as we are reporting to you here, we have to report again to the audit committee because this was reported to the audit committee as Mr. Jamison mentioned. This is treated as a “failure”, I am pretty sure someone is going to use it against me, but -- so we are reporting back to the audit committee with

respect to the corrective action plans and then the CMD that is being presented to you. We will be requesting, not just requesting, but we will undergo an audit in order to make sure that the implementation of the program is being done.

MEMBER McDILL: Thank you. Thank you, Mr. Chair.

THE CHAIRMAN: Dr. Barriault.

MEMBER BARRIAULT: Thank you Mr. Chairman.

First of all I would like to thank you for candour in presenting the explanation to all of us, but I'm a little concerned that we're doing, we've done an internal review rather have an outside agency to come in and do it. And the reason I am saying that is because I'm not doubting the fact that you're doing an excellent job, but it must appear to the public to be completely arm's length, independent, whatever. To my way of thinking - and correct me if I'm wrong - it's the same kind of audit you would do for a chain of custody in a police department, for example, for cocaine or whatever. You know it's not rocket science, or at least I don't think so.

The next question really is do you have any radioactive sources on hand that are much more intense than these check sources, that the same thing could

happen?

DR. THOMPSON: Dr. Barriault, we'll sort of take turn---

MEMBER BARRIAULT: Sure.

DR. THOMPSON: --- handling bits and pieces of your questions and your comments.

In terms of the -- the lab has a large number of sources and you are right to point out that there are within the lab inventory more significant sources than the check sources and that's one of the reasons that the work that was immediately done by the lab staff was to consolidate the six inventories we had of various bits and pieces into one solid inventory. Everything was bar coded and there is now a mechanism in place to actually verify, physically verify all the sources.

The concern that I had with the event in the summer is that the lack of procedures and control made it such that any of those sources could have been handled in the same way. And that's what we wanted to make sure, that it doesn't happen to small sources but it doesn't happen to big sources either.

MEMBER BARRIAULT: Excellent.

DR. THOMPSON: And from that point of view I'm comfortable that what has been put in place is

effective for all sources.

MEMBER BARRIAULT: And you're answering -- my next question was this is a situation of good luck rather than good management; I guess as to what happened in the past. What I would like to ask now at this point really is, for example, if somebody returns a source after taking it out, are you certain that the source being returned is the same as the source that was taken out? In other words, can there be substitutions?

DR. THOMPSON: My answer - Patsy Thompson for the record - the answer is no, but I'll ask Mr. Picard to actually explain the process that is being used and how the bar codes are being used.

MEMBER BARRIAULT: Thank you.

MR. PICARD: Yani Picard.

On each of our sources, we did apply a label and the label is very difficult to remove actually. And unless there is a really -- there is an intent to do it, in principle we should be able to make sure that whatever comes back into the lab is the source that went out.

MEMBER BARRIAULT: So does that exist now or is what will be put in in the future?

MR. PICARD: It's in place. That's what we did right away.

DR. THOMPSON: A physical scan.

MR. PICARD: Yeah, and so there's a bar code, a 2D bar code, and basically there's –- we have scanners now. So everything -- we also now in our procedures for inventory control, we do have to do a full inventory every -- four times a year, and we use a bar scanner to do it and we did the last one on December 14th and we were able to certify that all the sources we had were in storage.

MEMBER BARRIAULT: Were the same. Does your scanner measure the radioactive level of material returning?

MR. PICARD: No, it's just a scanner to measure the bar code.

MEMBER BARRIAULT: Okay.

MR. PICARD: Yeah.

MEMBER BARRIAULT: But wouldn't it be better to have something that is going to say, "yes, this is the same radioactive source that went out." In other words, can somebody substitute the bar code?

MR. PICARD: Yeah, for the -- in our procedure, when they are big sources we do also check them with a survey meter.

MEMBER BARRIAULT: Okay. I guess the next question I have really is that this happened last summer,

when can we expect the finalization of all of this and say, okay from now on we know that everything is secure, secure. Do we have a date on that?

DR. THOMPSON: Patsy Thompson, for the record.

All the sources are at the lab secure.

MEMBER BARRIAULT: Okay.

DR. THOMPSON: There are still sources in three locations of the twelve locations on our license. Their identity has been confirmed and what we need to do now is to arrange for transport of that material to the CNSC lab.

MEMBER BARRIAULT: Okay.

DR. THOMPSON: But they have been identified and the inventory has been reconciled.

MEMBER BARRIAULT: Thank you. That's all Mr. Chairman. Thank you.

MR. JAMIESON: If I might - Terry Jamieson - Dr. Barriault, your question on "could this happen with a larger source" is a very good one and in part that's why we use this as a learning opportunity; as an organization with a strong safety culture, we've gone to great lengths to make sure that this could not happen with larger sources.

Your question on bringing in an external

consultant, external group to look at what we've done, we have considered that already and in fact we've identified a consultant to come in and do that. We identified that consultant early last fall. We chose to delay bringing him in until we had gone through essentially 90 percent of our own internal remediation efforts; that consultant will come in, they'll do their own lessons learned. They'll review what we've done in response and then also make sure that we're on track for our own certification of the lab.

MEMBER BARRIAULT: Thank you.

It's not that I doubt the work that you've done and the work that is being done, but as I say, to the public it must appear that work, squeaky clean and all of this, really saying what I mean, the Commission would be more comfortable if, you know, if this happened. Obviously it's gonna happen so thank you.

Thank you, Mr. Chair.

THE CHAIRMAN: Thank you. Mr. Tolgyesi.

MEMBER TOLGYESI: What you are saying that is four times a year is inventory completed. That's what you are saying?

DR. THOMPSON: Patsy Thompson, for the record.

I'll ask Mr. Picard to actually -- there's a -- the requirement to do a physical reconciliation of

all the sources four times a year. But there is an actual control of sources on a day to day basis as they are being used. So it's not that we don't care except four times a year when we verify. We now have in place a procedure to make sure that if someone requires a source, they actually request is electronically, and I'll ask Mr. Picard to actually explain what information is being requested and how the control of when the source is given and when it needs to come back is done.

MR. PICARD: Yes, we now have a procedure for requesting the sources and there is a form associated with it. So an authorized user must use the form now to get source. And the request will be evaluated by me or my colleague who's acting as the assistant RSO, and then we're gonna decide if it's okay for their purpose to use the source. We also are going to introduce an internal permit system, so depending also of the activity of the source, we have to make sure that there is –- if it's a high risk, that they do have an internal permit to get the source and they're authorized to get it. Once the request is accepted, then we arrange for the shipping of the source and also we have to update the data base. It's all described in our procedure. And then the source goes and in our data base it's gonna be allocated, it's not out of our inventory, it's just assigned to that specific

location where we're sending it. And we send it, we can send it either on permanent loan or on short term loan. And therefore, when we do our quarterly inventory, we have a picture of where our sources are located, either at the lab or divisional offices. And this is just a confirmation that we haven't lost anything, that we know where the things are, and it's just a reassurance.

MEMBER BARRIAULT: Cause I -- I was participating in a -- on explosives, you know, storage and control, and there was a storage and there was a log book, and that's much different types of explosives, but you could do any time a physical reconciliation because it's marked what's in, what's out, whatever this, it's another thing. But anytime an inspector could come and look in logbook, what's in, what's out, and he could confirm it is as it's written or it's not. So that's why I have a thing that if you do that just four times a year, I think inspectors could come anytime and just to check how the inventory is doing.

DR. THOMPSON: Patsy Thompson for the record. You are right and the database is maintained and updated on a day-to-day basis as sources come in and are returned to the lab. And as Mr. Picard explained, we know exactly where the sources are. In the past, the logs were actually paper logs so -- and -- but right now, the

database is a fully auditable database and everything is marked and tracked. And so an inspector can do an inspection and trace all the movements of sources as easily, and probably more easily, than on a pieces of paper. It was one of the issues with the paper records in the past. It's not always straightforward to keep track of pieces of paper.

THE CHAIRMAN: Anybody else? I got two quick questions. First of all, you mentioned that you're still moving on to the accreditation, will this event and all the stuff you put in, will that facilitate the accreditation or delay the accreditation? And what's the deadline and -- for accreditation? And is that a good management practice that is going to be counted as part of the accreditation?

DR. THOMPSON: Patsy Thompson for the record. The answer to your question is yes and no. And so the first part is is there a delay? Yes, there is a delay. Essentially the staff who were supposed to be working on all the procedures in relation to the accreditation of the calibration services spent most of the fall working on procedures and upgrades to our licensing documents. In terms of will it help? The answer to that is yes, it will help. All the procedures for management reviews, self-assessments, document

control, record control, all these procedures are needed for the ISO 17025 accreditation. And so from that point of view, it will be helpful to have procedures that are aligned for both the CNSC licence and the ISO 17025 accreditation.

THE CHAIRMAN: So did I hear -- I didn't hear a date somewhere in there.

DR. THOMPSON: Patsy Thompson for the record. Essentially the plans for the accreditation, and I'm going to look at Mr. Picard and ask him to confirm or not. My recollection of the dates is that we will be getting an internal -- an audit from an external third party. We've made arrangements with the Ontario Ministry of Labour who have laboratory activities similar to ours and are accredited. And we've made arrangements with the Québec ministry of environment to have an accreditation service for laboratories in Québec to do assessments of our readiness of our application for certification. These arrangements are being put in place and should happen between now and the middle of the summer. And we believe our application for accreditation will be ready and we will have done corrective actions on whatever the auditors find for next September.

THE CHAIRMAN: Mr. Picard finds this funny.

DR. THOMPSON: Okay, one of the issue, the

outstanding issue is the LIMS, the Laboratory Information Management System software. There's been a bit of a delay in acquisition of that software. And so it's -- we need to align the dates for acquisition of the software with the application for certification. And I will need to check on that date, but I think by fall 2013 we should be in a position to move towards accreditation.

THE CHAIRMAN: Okay. My last question is you mentioned virtual sources, is that real and will that make all this problem go away anyhow?

DR. THOMPSON: Patsy Thompson for the record. Mr. Picard can explain the system. It will make the problems go away for training.

MR. PICARD: On the market, now we can get sources that emit radio frequencies and we can -- they would modify -- or, basically, they have an outside of a survey meter that is modified to detect those RF signals. So you can actually use them in the field to practice. And there's also more sophisticated system which are using either a GPS system or RF transmitters that are placed in the room, and the room is mapped into a computer. And the operator on the computer can allocate virtual sources in the room. And then basically people following the training can go with their survey meter and have readings that are sent by the computer based on their position and

the position of the source ---

THE CHAIRMAN: But those would be fake geiger counter, won't they?

MR. PICARD: Basically ---

THE CHAIRMAN: It's like heresy, isn’t it?

MR. PICARD: Yeah, there’s no radiation involved at all, it’s for training purposes only.

THE CHAIRMAN: You’re sure you want to train somebody without the real McCoy? So you left -- the actual emission device will not be the real thing?

MR. PICARD: Yeah. Well the idea is to be ALARA too, but depending on the development of these companies, it doesn’t mean that it’s going to cover all possible training that, for example, first responders may need. That could be something, for example, for summer students coming working at the Commission where is it essential that they need sources? Maybe not. But of course, for first responder, we would have to fit with the people from the Emergency Preparedness Program -- Emergency Management Programs Division and see what type of training they do before adopting something like this.

THE CHAIRMAN: Okay. Thank you. Thank you very much. We will take, I think, 10 minutes break we’ll resume at 3 o'clock. Thank you.

--- Upon recessing at 2:49 p.m./

L'audience est suspendue à 14h49

--- Upon resuming at 3:04 p.m./

L'audience est reprise à 15h04

THE CHAIRMAN: I guess everybody thought this is going to be a classified presentation or they've heard you so often, Ramzi, they -- we are looking forward to get some -- the inside story on your visit to Fukushima. So I'm not going to say anymore, let's jump in there. It's -- looks like a substantial presentation, so go for it.

6.2 CNSC Staff Site Visit to Fukushima

13-M9
Oral presentation by CNSC staff

MR. JAMMAL: Thank you Mr. President. For the record, it's Ramzi Jammal.

Sir, all we've done is -- I have not -- let me start by saying all we did is just formatted the paper I was given on the trip to fit your screen. So that's

what you see here is exactly scanned and then put into a presentation format. And kudos to one colleague by the name of Sue Gélinas who worked really tiredlessly to put it together and for me to review it. So that's why we have a big thick presentation in front of you.

And I can scale the speed, but I would like to share with you a special tour when we attended the Ministerial Conference in Koriyama, Japan. Koriyama is city in the Fukushima Prefecture. And I will give a bit more detail. And the Ministerial Conference is a follow-up conference that was headed by our ambassador, His Excellency John Barrett, the ambassador of Canada to Vienna. And there was a delegation, Canadian delegation, and Canada, to be proud of, is the only country who brought operators to be part of the delegation, no other member state has brought operator as licensee.

So in addition to myself, Mr. Jason Cameron, Director General of the CNSC was with me. From Health Canada, was represented by Ms. Hilary Geller, Assistant Deputy Minister for the Healthy Environment and Consumer Safety Branch with her Director, Mr. Brian Ahier, Director of Radiation Protection Bureau and Mr. Robert Derouin who was -- who is a Minister and Deputy Head of Mission of our Embassy in Japan in Toyko. From AECL, Mr. Bill Kuperschmidt (phonetic), Vice President and Research

Development and Mr. Robert Sprinzsani (phonetic) from AECL also, and Mr. Marc Elliott as an OPG operator.

So as I mentioned, the tours were only allowed to chair people of the sessions and selective people allowed to go, so I was lucky enough to be on site. Some people call it unlucky, but I was lucky enough to be on site, itself, and I will share with you my experience.

The first part of the presentation is really what I received from the Japanese, being the locals, being the perfect tourists themselves. I did not modify anything to include typos in the presentations, so I'm not giving my opinion; I'm just presenting the fact as it was presented to me.

So I'll start with -- this is an overview of the Tohoku region or the area or the section of Japan -- this is a bit of the geography where the incident did take place. And Tohoku region is made up of several prefectures; Fukushima is one of these prefectures.

So what happened is: post the event -- and this is where the complication or the decision-making process was put in place -- so on January 1st, 2012, they had to introduce new -- new legislation and this is the translation of promoting decontamination, so what it means here is in carrying out the decontamination. So they had no laws in place, so they had to pass an act and

regulations in order to put in place the planned activities for decontamination to include implementation.

So they divided the areas into two major areas; special decontamination area and then intensive contamination area. What they've done is the special decontamination area was based on the dose rate and which encompassed 11 municipalities that some of them were former restricted zones less than 20 kilometres away from the nuclear power plants or had an annual cumulative dose of 20 millisieverts.

And the decontamination of the special decontamination area is being implemented by the -- well, I mean, excuse my wording here, but it's the national government or the equivalent to our federal government. I don't have to list them, but this -- this is -- the area is on the presentation on -- on an asterisk.

On the intensive contamination area, this is 104 municipalities and 8 prefectures; again, in the Tohoku region. And where they took the basis is: 0.23 microsievert per hour as an air dose rate which translates, according to the calculation, to be 1 millisievert per year and this is -- were observed or calculated, those were designated to be intensive contamination area and that's one of the areas I visited and I'll be sharing with you the experience we had.

This is where it’s very interesting is each municipality has its own decontamination plan and then the money is being paid for by the national government and so the technical measures are dictated by the national government.

So as I mentioned is the Tohoku region is -- consists of Iwate, Miyagi, Fukushima, Gunma, Tochigi, Saitama, Ibaraki and Chiba and those are the prefectures or the equivalent to us is provinces and on the left-hand side is where the Tohoku region, itself, and on the right-hand side is -- is a magnified picture showing the prefectures -- prefectures closely as it relates to the spread of the plumes with respect to contamination.

So what -- what they’ve done is they start to do -- sorry, I’m on slide number 6 now, what they’ve done is they’ve put in place the limits and what is it they want to do as a goal. What they use is the ICRP 2000 103 recommendation. This is a recommendation from the ICRP talking to the authorities on how to deal with in case of emergency and applied the principle of 20 millisievert per year even though we know that below 100 millisievert per year does not demonstrate any health effect.

So the -- the government decided that anything above 20 millisievert of background is considered

to be an additional exposure and anything, again, above background up to the limit of 20 millisievert, hence they want to carry out the cleanup to be 1 millisievert or -- or less per year; again, it's 1 millisievert per year.

So they are -- wanted to target the general public and of course the children of young age. So they're -- they aim to by August 2013 to reduce the general public dose by 50 per cent in two years and then the 60 per cent in two years to the children. I'll come back on a bit more detail with respect to what -- what 60 per cent represents.

And of course radioactive decay has taken its course; decay by natural factors or the removal itself.

If I'm going too slow, Mr. President, let me know and then I'll speed up.

So the progress and the special decontamination area ---

THE CHAIRMAN: Just so you know, we need to stop at 4 o'clock sharp I understand; right?

MR. JAMMAL: Yeah, thank you.

So the -- the decision of the local decision, I'm going to re-emphasize the fact that local decisions they decided and the full-scale decontamination activity in -- in some certain villages that they are

actually moving -- cleaning up forests. They're literally cleaning up forests, removing foliage and leaves and topsoil. Every house garden is being cleaned up, removing a layer of topsoil. Any driveway, parking stall, is being done and every house is being scrubbed. When I speak -- literally scrubbed with a sponge and -- and a handle and then just -- people just going around scrubbing the walls and the roofs. I'll give you a bit more pictures afterwards.

The next line is talking about the intensive area and the intensive area is the Tohoku area which I'm going to focus on. As we can see on slide number 10 how many municipalities are involved and each one of them has a say and input and a -- a role to play. So on this slide, it actually shows certain municipalities still do not have a plan on the right-hand side. Whereas, municipality indicating that has completed the consultation process. They established the regulatory requirement and any other municipality that is interconnected over this, so in total 104 municipality that are taking on the decontamination process.

So the residential area was started as of November 2012, so that's very, very recent information because when we were there, it was being given to us.

So they -- they did the modeling and a

sample of decontamination, so they started with the gutters, the roofs, the garden themselves, the tree pruning, the gravel sites, the concrete floors, the drain, high-pressure washing and physical high-pressure washing. As we were given the tour, you'd see them with a high-pressure washer literally just like a high-pressure car wash; of course, a bit more advanced so it has its own section. They contained the water and they're doing every wall, every sidewalk, every stone, everything else being done. And that they're removing the topsoil from the gardens and they're trimming and cleaning up trees and so on so forth. That's -- that's the Fukushima area that they've decided to go to that level.

Now, on slide number 12 becomes a challenge. Now, what is it you're going to do with the stuff you remove? So they removed the topsoil to a depth varied from -- anywhere from roughly 2 centimetres all the way down to 5 to 10 centimetres depending on the hot spots in the area. They had -- they have two things that they were doing. They're putting them into bags and moving them into a baseball fields as a temporary storage or if they run out of area to store these bags, they're looking if the -- if the garden -- la cour, the site of the house they have enough room, they will dig deep in the house, remove the topsoil, put it in the bag and bury it on

location and cover it up so as a -- as a storage from that perspective.

Sir, I'm just saying myself to give my own opinion, yes, that is. So the -- I'd like to share with you the complexity and the magnitude of their decision and the decision to go to one millisievert or below, to the extent what's being done.

So as of November 2012, the farmland, 778, hectares are being completed by then. The elementary, junior high school, public and private, 119. And of course, you know, it's self-explanatory on the slide itself, city park, 198, social, education, welfare institutions, those includes medical hospitals and so forth up to 42. And here -- sorry. And here is the decontamination of the Fukushima City itself. I was there on December 14th, 2012. And this is being conducted by the Risk Management Office of the Fukushima City.

Unfortunately I don't have a chance to download what I took as a Blackberry picture, but I will share it with you later. Fukushima City itself is a beautiful city. It's -- if you think of British Columbia with the plains behind the rocky mountains, and that's what Fukushima City is, surrounded by beautiful mountains. It's a very, very beautiful city and it's more into the valley. And so we're overseeing the whole city itself.

And here's the plume distribution based on those streets. And I'm sorry, I cannot translate Japanese, but we were roughly, the city itself, up to 60 kilometres away from the site itself, the Daiichi site and they decided to clean-up the plumes.

And the city itself was divided into districts from the municipality. In red is the Watari district, which has an airborne radiation level of 1.02 to 4.05, roughly, microsievert per hour. And Ouami, those are the areas that they've highlighted as part of the districts. And again I'd like to remind the Commission, those are, I would consider, very low level. And again, I'm going to refrain from my opinion but this is what they've decided to do. So roughly 0.23 microsievert per hour gives an approximate dose, whole body dose, of one millisievert per year.

And again, this is not my text. I'd just like to re-emphasize this. This is what's been handed to me by the governor of the prefecture of Fukushima and the city person who's looking after the clean up. So there was an evacuation zone declared in the prefecture, residents were -- are moved elsewhere. In the Fukushima City itself people are back in their houses. They currently live in their houses as the decontamination is taking place. So they all went back to factories, shops.

Farms are fully active. And the city itself, like I said, it's a beautiful residential city. They -- quite extensive number of residential homes do exist. And for us, when we were in Koriyama, we were eating the food products coming from Fukushima itself. It's got a tempered climate so they grow everything from persimmons, to fruits, to vegetables, to rice and everything else and we were consuming those products.

So what they've done is, it started on September 11th, they decided the basic principles. And they amended their practice with respect to the decontamination procedure. And of course, the objectives were determined, implementation by the city administration. Again, the city themself determined the dose and then decided priority by the districts, of course from the highest level to the most occupant levels. And the cost was known to be by the national government. As part of the tour when I asked the question, "What's the long-term management of these temporary sites?" The answer was the federal government will look after it in three years and will pay for its removal. So that's where we -- that's their answer for everything, that the federal government will pay.

So the decontamination plan for the home town, what they meant is the central core of the city

itself and the residential area. So they -- their intent is to reduce the dose rate in citizens' living environment to less than 1 microsievert per hour in a two-year period. Reduce the air dose rate by 60 percent for areas with less than microsievert in two years. Again, reduce citizen-estimated exposure to less than one millisievert per year based on 0.23 microsievert per hour. And they would like to keep it at that level.

So they've divided it into regional aspects for priority's perspective. So areas of relatively high radiation dose, including hot spots, were cleaned up. As we saw, the Ouami and Watari who were -- the two cities that were highlighted in red. And of course the purpose and frequency where spaces are going to be used by citizens, roads and schools and parks. And at that point they determine to clean up regardless of the dose.

That's a plan with respect to the contamination plan. To show you that in 2011 they finished roughly 400 homes. They're completing 227 houses and again the Watari district, and so on and so forth.

The wood area is being cleaned up. The orchids one by one. They wash every tree. They prune every tree. They remove the soil according to what's being done. I'll go to page number 9. And this is a sample of the residence clean up. They start from the top

to the bottom. The gutters, as we'll see later on, has the highest concentration based on the clean up procedure or what's -- the plumes that came. And their intent is exactly as you can see. So they're basing it on two things, the counts per minute and doses at multi-distances at one centimetre or one metre, depending on the occupancy factor of the areas. So the top soil, they want to take it down to 0.4 microsievert per hour. Sidewalks are being cleaned, garden trees, top soil, balconies, stairs outside and the carports on the left-hand side is very common in that area. It's a carport, as you can see, this angled structure. And they're again for the clean up.

So here's an actual picture of the clean up. They start from the top, they clean the gutters. On the right-hand side corner, you see them mopping every wall, every window, every component of the house. The driveways are being cleaned up where it's common. Removing the concrete blocks, removing the soil underneath and then re-put everything back as it was before. On the -- again it's on the left hand side, is a worker in a basket that's cleaning up a building itself. Underneath him, the pruning. And in the middle is the excavator removing the top soil.

And here is an example of the orchids cleaning. It's high pressure. Literally they have to do

-- they've done and will be doing 2,100 hectares. And the approximate cost is 2.8 billion Japanese Yen.

I would like to remind our colleagues and what our president always mention, it's look at the cost that's going to be when people sometimes object to short-term cost. Look at the long-term cost for clean up. And here's one example from the Commission direction to staff to consider fear of mitigation measures and what the consequences would be.

Page -- on slide number 24. Zeolite is an absorbent to cesium. And their prior -- primary removal right now is the cesium because that's the longest lived half-life. All the other substances of a few days half-life have disappeared, decayed to very low levels, undetectable. So that you can see in spraying the zeolite in rice paddies and into fields and marshes.

They've cleaned up the kindergarten schools. I am on slide number 26 now, sorry. Again -- but you can see how they do the proposed decontamination. If they have room to store the soil, they would. If they don't, they will just dig and turn over the soil, put the clean on top and then the dirty at the -- on the bottom. And most of -- all of the schools, as a matter of fact, and nurseries were completed by August 2011 to the cost of 1.77 billion Japanese Yen. City park, as you can see,

again they -- this is in one prefecture and actually in one city, which is Fukushima, 560 million Japanese Yen.

Here is of interest with respect to the -- page 28 or slide number 28 -- with the current decontamination in Fukushima City. So as I mentioned they had multiple phases, the first phase and second phase. And where are they with respect to the progress rate and I can see it's almost completed, what they wanted to do in the high area, and then now they're moving into the low-level areas where they want to do -- and, again, this is each district, just part of the statistics.

So each municipality functions, like road management, forestry maintenance, were determined to be the office in charge of the clean-up, and each one of them had to follow the clean-up criteria and then each one inspected the others in order to make sure that it's been completed.

So the farmland, as of December 3rd, 2011, for example, they've completed almost all the orchards, almost the paddies are completed, and the fields are in progress. So they put them in priority in what they need to do.

Item on slide number 30, again, this is statistics with respect to the schools, nurseries. What it means here, who -- what was ordered and what's been

completed, and the cumulative is the addition over the period of -- since the event has taken place.

Okay, we have a problem with the slides. Okay, I hope you have a slide called number 31. You do? And the title on slide number 31 says -- yes, but my 31 here is different. Okay, thank you. Okay, thanks. Thank you very much. Sorry.

There is an error on this slide. It talks about the result of decontamination in Watari district. The “Before Decontamination” is correct title; the second one should be, “Post-Decontamination.” Thank you very much, yes.

And, like I said, this is -- the credit is not for me, it’s the credit for the handouts, and that was -- we carried over the typos.

So as you can see, this is a typical example of the clean-up. At the entrance of the house, at one centimetre the count rate was .57 microsievert per hour. Post-decontamination, it was reduced to .26. At one metre level, and again we can talk about full applied geometry and so on and so forth -- they spent millions and billions to reduce it to -- from .579 to .436.

The garden, they reduced it from 1.8 microsievert per hour to 0.4, or .5. It’s a reduction, again, of each house that’s being done, and this is a

sample.

Parking lots, this is as pertains to a house. The exterior walls were cleaned up. The gutters -- like I mentioned, the gutters were the highest concentrations, and they were reduced post-clean-up to .649, top and bottom.

Now, they've done measurements on the inside of the house, as before decontamination and post-decontamination, and you can see this is the dose rate inside the house on most occupational areas within the house, and they found it to be a reduction from .267 to .17. And with two family rooms, or second floor, .391 to .261.

So that's where they wanted to meet, to confirm that the current decontamination methods have a certain level of effect, and they're still thinking of new methods that will be needed to apply for the places that still have more than one microsievert per hour.

THE CHAIRMAN: Just so I understand, why did they put the counts per minute, you know? The count per minute reduction doesn't jive with the radiation.

MR. JAMMAL: That's a very good question. They used -- they tried to put the count per minute in order to determine if there were any hotspots with respect to the count itself, and then -- you're right, because the

count -- I mean, that's why I didn't want to go into the four-ply geometry or anything.

So the measurement of the dose rate is much more of an integral aspect versus the count rate, which is where they were going for hotspots areas.

THE CHAIRMAN: So even though the count rate goes down by 50 percent, or more than that. I mean, 12 -- I'm looking at the parking lot, one centimetre, 1240 down to 603. It's a big reduction. The actual ---

MR. JAMMAL: Dose rate has that, too.

THE CHAIRMAN: --- dose rate is not ---

MR. JAMMAL: Because the count rate is not giving you ---

THE CHAIRMAN: Doesn't give you the impact on the biological.

MR. JAMMAL: Exactly. It's giving you the impact of the hotspot itself, whereas the dose rate at the same level -- if you're not over, this is the average dose rate. That's what is very important; it's giving you the ambient dose rate in relation to that hotspot.

Like, there's a hotspot and then you don't measure the dose rate over the hot spot; you measure the dose rate where the person is going to be.

Now, of interest to the Commission, there is always a -- behind every disaster there are lessons

learned, and in the case of the Japanese accident, the follow-up of children and child-bearing age group is being followed-up extensively. Hence, the results to state, at the bottom -- this is not my conclusion, this is the conclusion of the health authority, that low-probability of “future increase of cancer through radiation is low” -- “still is low.”

The UNSCEAR has declared at the conference itself that to date, there will be -- there are no health effects, and they do not foresee any health effects from the exposures received by workers and the public.

And the reason -- I just want to focus on this slide to show that every kid has been given a monitor. They are being followed-up, and with an extensive, complete tracking dosimetry with respect to the readings of the detectors.

So the data is not fictional, it’s real, from people who are alive, living on a day-to-day basis, and that’s very important. So you’ve got 48,700 dosimeters were given to all expectant mothers and children from birth to junior high school, that they wore these detectors and they were read.

And the second measurement, of course -- I mean, I don’t have to repeat it, so again it’s low probability, and this is one of the most extensive follow-

ups being carried out on people who were exposed accidentally with respect to the radiation dose.

On slide 34, the Japanese, with their ingenuity, so they have mobile, whole-body scanners, and they put in place those mobile scanners in order to count and follow-up with respect to internal exposure, if there are any, for, again, pregnant women, anyone who is a guardian of children from zero to three years old, four to six year old children, and elementary and junior high school students, and most of these people were scanned and their records have been put into a database for a follow-up.

They have in place, and still do, inspections with respect to the food of lunches for kids to provide assurances to the public in general and the kids themselves that they are not eating radioactive materials. And those are instruments that the Japanese put together immediately, or they have borrowed some of the designs from the post-Chernobyl accident on what's being done for monitoring of the food. So they monitored lunches, schools -- even if the schools do prepare lunch, they monitored -- they count the lunches in the public facilities.

It's very important for the Fukushima assurances, with respect to the food safety -- the Hoku

University, which is the whole region university, was commissioned in order to ensure that the radiation measurements are being carried out properly and design the instrument and put in place the detectors.

And the germanium semiconductor detector is one of the most advanced, solid-state detectors that surpasses in its sensitivity any sodium iodide detectors. So these are state-of-the-art detection that really counts background levels and the very sensitive below-background levels.

As I mentioned, there was a scare with respect to the exportation of food from Fukushima to other areas, so again they established the scanning of the rice bags, and they do inspect and scan -- when I say “scan,” it’s not exposure, it’s an emission scanning, so they have detectors around the bag and the bag is the emitter, and then they determine if there is any contamination.

There are no contaminations from the bags that's being taken out or present.

This one is the post-Fukushima incident. A lot of rumours were flying around and still do exist from Tokyo region or any other region and certain opportunistic elements and society would always kind of come up with the fear-mongering aspect of the food is radioactive and so on so forth. So they do take efforts in order to promote

that the food is safe and they are trying to enhance safety.

So, these are not my words, again. I'd like to -- this is to reiterate the fact that Fukushima has borne the brunt of the March 11 disaster. What he meant is clean up is underway, the town itself is counting on TEPCO, which is currently 51 percent owned by the government of Japan, and that the national government or central government is decreed responsible in the costs to restore Fukushima. And degree construction, what they mean is rehabilitation of Fukushima. And 2012 is the year to complete everything that's being done.

THE CHAIRMAN: So, this report was tabled at the Ministerial?

MR. JAMMAL: This report, sir, was tabled at the dedicated tour; special invitees to the tour that we were in. And this was given to us at the Fukushima centre itself, overseeing the city, and that's what was shared with us. This was tabled.

THE CHAIRMAN: So, when you mention the UNS ---

MR. JAMMAL: UNSCEAR.

THE CHAIRMAN: --- UNSCEAR, was that that part of this -- I mean, I'm trying to figure out whether there was any formal presentation by UNSCEAR?

MR. JAMMAL: Yes. There was a formal presentation by UNSCEAR, and literally reviewed the data in completion, the follow-up data. And that presentation is actually currently on the website. Again, I ran out of time in this ---

THE CHAIRMAN: Can you send it to me, please?

MR. JAMMAL: Yes, will do. And that presentation was in the third session, where unequivocally declared that to date there are no other health effect to the workers nor to the public. And, on the way back from Koriyama to Tokyo, when I gave the town hall discussion with the embassy staff, that's where my quote came from. I added that slide on the train.

Now, towards the end of the conference, again, Mr. Cameron was with me, we were only, I believe, no more than 15 people who were allowed to visit the site. My accompanying colleague on the bus was Mr. Mike Whiteman, who visited the site right after the accident. He has not been since then. So, we were chatting and having discussions on site as we got there.

So, I'm going to share with you at the high level as of December 2012 what's been given, again by TEPCO. So, I, personally, you will see it later on the pictures, I was put in Tyvek, fully-suited, I went to the

top of the roof of reactor number 4. And then, accidentally, willingly walked towards unit number 3 -- the Japanese colleagues did not like it very much, so I was being told to come back because the dose rate was high. But I was able to come within three meters of unit 3. So I'll share with you some of the pictures. It's quite a devastating scene, as a matter of fact.

The Japanese must be commended on the clean up that they have done, the command and control society with respect of the setup and what has been done. So the clean up of the debris is ongoing. And then I will share with you a little bit more of the pictures itself. So the debris is ongoing. As you can see in this slide, the debris in September 2011 versus July 2012.

Why am I focusing on this spent fuel pool of unit number 4? The spent fuel pool of reactor building unit number 4 is a big concern in Japan. Every once in a while, the media comes up with "Oh my gosh, t he spent fuel pool is going to leak." "It is not sound, it's not seismic-qualified." Certain NGOs will reengage to say: "Fuel is going to -- there will be more source term dispersion of radioactive material from the fuel pool."

So, the fuel pool itself has been reinforced, they have put concrete underneath the fuel pool. And they are taking measurements and assessments at

both levels on an optical dimension and the physical measurement itself in order to ensure that the fuel pool will maintain its integrity.

So I'll go to a slide which is a bit more detailed. So they put the steel beams on the left-hand side or pillars underneath to support the bottom of the fuel pool. And then, in addition to the -- if you look towards the middle, just right -- the picture right after -- I have a mouse here -- this picture here is -- you can see the support that was added to the bottom of the fuel pool. There's a concrete wall, it's all high-density concrete an -- in addition to the steel pillar, in order to enhance the capacity of the margins of the fuel pool itself.

So they have multiple indicators in place in order to determine the integrity of the fuel pool. So they have what they call the skimmers search tank and they're measuring multiple things: the water level to the base of the pool, the water level in the skimmer tank, they're looking at the reinforcement of the concrete, they're doing NDT testing, they're doing all kinds of periodic inspections to ensure the integrity of the fuel pool is maintained.

So, here is an example of what's being done and the NDT testing to the levels of the waters. And,

what they've done is actually -- is they created an optical representation to include laser points on the wall itself in order to determine any shifts or anything that's taking place.

So here is the construction of the fuel extraction cover. Unit number 4, what I will -- I will show the picture later on -- the unit number 4 is -- on the first here is -- this is the way it is exposed. So in other words, when they finish removing the debris, that's what it's going to look like. And this is the cover, actually, of the fuel pool. What they want to do is build on the outside, the beam, in order to remove the fuel, the spent fuel, out the fuel pool itself. And this structure is outside the building itself so all the way to the outside. And then they want to put the skeletal cover or the cover of this building in order to remove it. I'll end it -- on the slide afterwards, I'll give you a little bit more details on this.

And that's what they're doing. Currently, they are not at this stage, they're working towards this clean up of the fuel pool. The site itself, Fukushima Daiichi site will be decommissioned completely, all of them. All of the -- now, they're currently building the containers for the dry storage of the fuel. And that's what they want to do. So in other words, that's the

structure itself. The casts for the transport of the fuel is currently being built and designed. As a matter of fact, they transfer it within the pool itself, remove, and then take it to the dry storage area. That's what they want to do. And then, all of the weight is not on the building itself, on the outside of the building.

Unit 4, as you recall, was in maintenance. The top of the reactor vessel still is where it was during the Fukushima accident. Now, to prevent the water coming from the mountain itself -- because there are hills around the site itself -- so they put protections in place so that the water is not overflowing to the other site. And, here's the contaminated water. There are massive amounts of water that has been used for cooling, maintaining cooling. All this water is being treated to remove the radioactive material through reverse osmosis and they've built massive water treatment plants.

In addition to the water treatment plants, they've added currently a temporary wall -- I'm on slide number 50 -- temporary wall for the -- take any potential more tsumamis. The existing temporary wall is, I believe it's around 15 metres in height, taking in consideration the elevation of the reactor site at 7 metres. It's a temporary wall, it's full of rocks, and it's sitting there.

These are the pictures of the units, unit 3 in specific; unit 3, this is what the hydrogen explosion did take place. And this is, as of October 16th, this is unit 4. We were right on top of the unit number 4 and that's what currently it is at.

So, very, very quickly, the mid-range, long-range, as I mentioned, they want to decommission the sites, so they have the plan in place. Again, it's easy to read. I'm not going to repeat what is on the slide, so definitely and by the -- between 50 to 60 years, they want to decommission it.

So of course there is engagement of the government here, the decision with respect to the government and TEPCO and the council of TEPCO. The TEPCO council or advisors, they have hired several -- one of them is Dr. Kline, the previous chairman of CNRC, so they brought in external advisor in order to look at the safety culture and in order to look at the progress with respect to decommissioning and everything, how things are being done with respect to international standards.

And as I mentioned, here's the four phases. And this is where they want to be in 30 to 40 years with respect to decommissioning. So they have the multiple phases; phase 1, and step 1 and 2. And Phase 1 is of course the cleanup of the debris. Taking into

consideration every time that they remove debris, what is the impact on the structure itself and then within 10 years with respect to the fuel debris being removed from the core itself, from the reactor vessels, and then everything is being put into dry storage and decontamination of the sites.

This is as of November 30th, these measurements were done right on site and they were given to us when we were there. So what they're monitoring there right now is the temperature on the upper unit 1. It's 16 degrees Celsius.

What is the number of the fuel bundles? Three hundred and eighty (380) fuel bundles. Water injection is ongoing. The reactor primary vessel temperature is 27 degrees and the primary containment vessel is 28 degrees Celsius. And the water temperature inside at the tallest level is 31 degrees. So in other words, the indication, there are no increase in pressure temperature to indicate that the cooling is not working properly. And each one of the units is being presented.

This is showing you, not to show you any -- me display myself here, but they have a quite extensive system with respect to as you come to the site. They do a whole body counting before you enter the exclusion zone. And this preparation area is a football field, a national

football field, where they put all this instrumentation in place and they can fast it in and they can process over 60 people at the same time. In and out, pre and post the visit. So we have to be counted before we get suited. We go on site, you are dressed in layers. When we get suited, two gloves. Two external layers. Two pairs of socks, booties and everything else because once you come back from the reactor site itself, you remove the outer layer and you go back to the clean area.

This one is an actual picture from the control room. Murphy's Law was at its best. The individual who was allowed to take picture from the IA never checked the battery on her camera so the battery died half-way through the visit. We could not take watches, take blackberry's. We could not take cameras cause you have to pre-register them ahead of time. Not because of security; if I had known I would have done it, for radiation protection purposes. Because what -- the camera here is wrapped in plastic. So it's just in case there is contamination, they don't hold back that instrument.

So you can see this is a seismic qualified control room that was built after or actually built before the accident. That is now their hub, their centre. And this control room is roughly five kilometres away from the

reactor site itself and these are actually cameras of instrumentation that were installed inside the reactors building.

Here is a seismic qualified room and I'd like to point to you, see those cranes here in this picture? The Japanese with their ingenuity now, these cranes are remotely controlled from this control room, using TV screens to remove the debris one element at a time. It's all remotely controlled. No human is sitting in the crane. It's all remotely controlled just like joy sticks. You watch it.

And these are the people who are monitoring every component of -- from the temperature pressure. There is a component for the reactor section and these are the mechanical people that are doing it.

These is the actual pictures on site itself. This is Unit #4. And again, this crane here is remotely controlled. This is the elevator shaft that took us up to the roof of Unit #4. Just look at the massive destruction. This is roughly five to six inches rebar's that were bent like toothpick and the concrete, high density concrete, reinforced concrete is around one and a half to two meters thick, just -- just -- just like toothpick, I mean just like house of cards that's been taken out.

And this is for control of dust and debris here. And that's where we went up. We went up here to the top of Unit #4. This is, I'm looking down at the spent fuel pool itself here. This is the spent fuel pool itself and these are temporary guards, guard rails and here is the injection of the cooling and measurements of the levels of the water and so on and so forth. It's -- unfortunately it wasn't dark enough to see the Cherenkov effect, but -- that's --.

This is a picture actually on the mass destruction. Unit #4 had a hydrogen explosion due to the leak of hydrogen from Unit #3. So they were going through the pipes and then cause the explosion in Unit 4. Because Unit 4 was not operating at the time but the hydrogen explosion took place as a consequence of Unit #3.

That's a turbine piping, but just look at the massive structures just blown out into proportion. This here is part of the control room on -- in between the reactors building.

That's where I walked across. This is Unit 3, right here. This is Unit 3. And the dose rate up here is around roughly 1.5 millisievert per hour. So it's not very high. But of course for occupancy, very short. And again this is looking down into the post hydrogen explosion; the spent fuel pool is here on the left itself.

Actually I would like to take your attention -- okay, I always screw up things, uh -- here if you look at the just -- it was -- it was humbling and fascinating to see that when you are up on the fourth -- the roof, you look at the sea. It was calm, beautiful beach around it and that what caused the massive tsunami and the destruction that take place.

This is the top cover of the spent fuel pool so debris will not coming in. This is Unit #4, looking down at the control room. This is what's left from the control room right here. This is inside the building itself.

That's me getting dressed up. Next to me is Mr. Marc Elliot from -- oh no, that's Jason. And Marc Elliot was next to us from from OPG.

This is the containers, or water treatment facility, where our -- they are building massive amount of these numbers in hectors and hectors in order to decontaminate the water that is being used for cooling.

On the site itself I brought this cam that is going to be used for recycling purposes. Unfortunately we don't have the picture, but I got to show you the -- think of 100,000 diesel tank that is in place and then we are driving by, unfortunately her camera died so I have to show you, so you look at that tank 100,000 L of diesel in

it. When the tsunami went in, you see the tank twisted in one direction, when the tsunami, like the sea went back out, see it twist the other direction. So you see this massive tank twisted both ways. You just see it one direction and you see it – and it's very unfortunate we didn't have that picture. Et c'est tout.

THE CHAIRMAN: Well, it looks like you had a good time.

MR. JAMMAL: I wish you were there, sir.

THE CHAIRMAN: Did you have a dosimeter on you all the time that can actually give you in millisievert?

MR. JAMMAL: Yes, I had a dosimeter on me. As a matter of fact, I will share that picture with the Commission. It's so embarrassing because I was sharing a session; they over burden me with the dosimeter. So the IE gave dosimeter. Tried to give me an additional dosimeter. Like Purgis only had one or two. I had to wear seven. I have no idea why.

So I ----

THE CHAIRMAN: You attract radiation.

MR. JAMMAL: I guess my baldness. So I will share that picture in Synergy and --. Yes I had multiple dosimeters from direct readers looking at dose rates versus absorb dose.

My visit to the site gave me 200 microsievert absorb dose. Point 2 millisievert.

THE CHAIRMAN: Mr. Tolgyesi.

MEMBER TOLGYESI: You know you were talking about these cranes which are remote controlled and what not. It's okay, but they should be installed there first. So how it works? Because it takes time and all these guards, et cetera, you know, which are there, these covers, that means the people should go there?

THE CHAIRMAN: What do you mean install them first?

MEMBER TOLGYESI: Somebody installed these cranes. Somebody installed this work, these covers and steel bars, et cetera.

THE CHAIRMAN: Yes.

MEMBER TOLGYESI: That means that they should stay there for hours and hours.

MR. JAMMAL: That's a very good question. Yes, they did the installations, but they had roughly the equivalent of 30,000 people working on site so that the dose distribution was done. So every -- depending on the work that was being done, let it be the rails, the time --

THE CHAIRMAN: They rotate them.

MR. JAMMAL: They rotated the people. So

one of the protective measures for radiation is time, shielding and distance. So they controlled the time of every -- each worker. Now since the doses are hovering around two-and-a-half to three millisievert, unit number 3, you don't see people in the unit itself. So it's all remotely controlled. The installation already did take place. So they -- depending on the activity and each and every person is assigned a work order and activity and then they have -- they are being monitored and then they are being brought back out.

MEMBER TOLGYESI: Thirty thousand people. That's lots of people and it was -- they attract voluntary, they were going there and working?

MR. JAMMAL: That's very true. As part of our visits, they -- there were voluntary people came back, x-employees of TEPCO, current employees of TEPCO and current employees of TEPCO. But of course the voluntary, when I say 30,000 people came back, so they -- some were the drivers, to drive workers, some were operators that they did heroic efforts.

And what's really, like you know, hits you in the heart quite a bit, when you go to the control room, you see the messages of their kids to their parents, the operators, the fathers or the mothers with messaging of courage, you know. And I asked for -- the person was next

to me to explain. You know, just, they're saying "We miss you", you know, "Thank you for help saving us" and so on and so forth.

So you see all these pictures all over the place. And the workers use those messages in order to keep themselves going. And you're correct, there was a lot of volunteers that came back in order to assist.

MEMBER TOLGYESI: What was the final mortality ---

MR. JAMMAL: The final mortality rate as it relates to the nuclear accident? Zero. There was worker who was -- I mean, succumbed to his injuries, but it was not radiation related. He was on a crane. However it is over 23,000 people from the event itself.

Now, that's not the only event that occurred in that area. I didn't show you some of the presentation that Koriyama, in the prefecture itself, they were hit by a monsoon a few months afterwards. Again they were flooded extensively. So that area is known to have its own disasters and then they just recover and they keep on going.

THE CHAIRMAN: Are they still debating the cleaning criteria and what they're going to do with the land because there are those who believe that, you know, this is the whole regulatory issue, that the one

millisievert is not a health issue, it’s a regulatory issue. So are they still sticking with those parameters? They will be there to clean up to one millisievert no matter how much it will cost and no matter how much it will prevent people to coming back?

MR. JAMMAL: It's a very good question, sir, and I asked the question of the director of the Fukushima City. His answer was, "Regardless of the health effect, regardless of what we know scientifically, regardless of what you guys say or what everybody says, we commit to be less than one millisievert and we want to be less than one millisievert."

Again, I’ll refrain from my opinion, but I’m going to say, which I said to him, they still intend to clean the forest on top of the mountain in Fukushima because they determined to do so. Their philosophy and his response was, "We committed to our Japanese people to do the clean up and we’re going to carry on doing the clean-up." So the science is not a factor, it’s more of a political decision at this point.

THE CHAIRMAN: But they don’t have a place to put all the waste? That’s a big issue. I mean, where in Japan are you going to put all the waste?

MR. JAMMAL: That’s a very good question. The -- when I, again, when I asked the question, "What is

your long-term and what are you going to do with it?" His answer, "In three years the federal government will get rid of it." The sad part of it is the -- I have the slide, and what they've done again in their ingenuity, they are able to determine through infrared imaging and determining the dose rate of those collective sites. In the hottest part, it's five microsievert per hour. In the hottest part of the consolidated storage area, of all the town, it's five microsievert per hour. That's the worst case scenario. So from this perspective, I hope they know what they're creating, but at the same time, that's what they're dealing with. They chose to deal with it from this perspective.

MEMBER BARRIAULT: Do you know if they've set up any health studies to monitor long term, these people? It's a golden opportunity I guess.

MR. JAMMAL: Yes it is, sir. Yes, they've -- it's ongoing follow-up from the children, to childbearing, to people's birth and so on and so forth and the adults and the workers. And of all the places, this is the best place to have the follow-up studies because they have the capacity and the follow-up, tracking precisely on the dose. And everyone is registered so it's -- the population is not migratory and they are in the location where they are, and being tracked and registered

and monitored.

MEMBER BARRIAULT: Do you know how many people are involved in this study? How many people are being tracked is what I mean?

MR. JAMMAL: I don't have that information. I can tell you it’s in the thousands. From Fukushima City itself, you’re looking at approximately in total group 100,000 people. Child -- children and childbearing women. And of course all of the workers are being followed up.

MEMBER BARRIAULT: Thank you.

THE CHAIRMAN: Ms. Velshi?

MEMBER VELSHI: Did you get to see how they were able to get the public’s confidence that it’s safe for them to come back home and, you know, allay any unnecessary concerns and fears?

MR. JAMMAL: Ramzi Jammal for the record. Did I see it? I did not see it. We asked the questions. I give them kudos. What they’ve done, and I believe I shared this with my boss, as part of their -- it’s a long answer but I’m going to give it to you briefly. What they’ve done to assure the public, they issued iPads, iPhones, Androids, everything that is actually registering in real time the dose -- dose rate as they go to their houses. What is being read, what’s being done.

So the suppliers, the cellular phone

suppliers, everybody, gave them dedicated -- to whoever wanted it, they were given to show them that those rates is really low. People accepting because of the evidence being given. So they have public forums. They bring in medical doctors to bring in health people to show them it's safe to come back to. And each one, whoever wants it, have in their house their iPad dedicated for this or Android, even family members. And I asked the question, "What happens if they lose it?" They give them another one.

So there are huge public assurances through monitoring and providing phone calls, like assistance. You know you want your spot cleaned up, then there is someone to call, someone to speak to, someone to visit. And education of what the doses mean.

THE CHAIRMAN: There's also a whole kind of a compensation program that goes in there. An incentive to go back. There's all kinds of things that's going on in terms of programs. Anybody ---

MEMBER HARVEY: Il y a aucune contestation? Il y a aucun groupe qui proteste -- c'est surprenant.

MR. JAMMAL: Il n'y a pas une contestation du public en général. C'est -- il y a les gens qui arrivent de l'extérieur. Et puis c'est eux qui démontrent des choses qui sont pas tout-à-fait correctes. Mais le

public en général, eux-mêmes qui se trouvent dans la région, ils vivent là-bas, ils connaissent les gens avec lesquels ils travaillent, et puis ils reçoivent les réponses des élus, des professionnels.

Mais il y a des contestations qui arrivent quelques fois; c'est pourquoi j'ai mentionné la piscine de la tranche numéro 4 parce que c'est la seule piscine qui est en péril, disons. Mais c'est pas un vrai péril. C'est un péril conceptuel à cause des médias et des gens qui disent toujours que on peut avoir un autre tsunami, on peut avoir un autre tremblement de terre qui va détruire la piscine.

THE CHAIRMAN: But, there's a whole big chunk of the population that will never go back. They all moved north afterwards, so ---

MEMBER HARVEY: I'm just relating that Fukushima with Port Hope, for example, but it's difficult to convince.

THE CHAIRMAN: Not everybody is going to come back. Remember, they were evacuated, not everybody is going to come back, no matter what.

DR. McDILL: But the same is true of New Orleans after Katrina, right?

THE CHAIRMAN: Yes.

MR. JAMMAL: The population themselves, I

mean in addition to what the President mentioned, it's sometimes they have nowhere to go. I had a chance to speak to the locals, okay? I said: “How -- you know, we are here as visitors, what do you think of our presence here?” I mean I had two or three people I talked to.

Well, the first response: “We don't trust the government." And "Your presence here, what does it relate to me? So what I want to do is to go back to my home, I want to be able to live normally." And, I asked the question: “Are you getting enough information?” They are getting information, they are rebuilding the trust, and that's why the clean up is being done at a level. You ask yourself what is the significance for the health effect? You know, there's no significance or is there an added value to go to that expense. But that's a commitment that's being done politically.

MEMBER BARRIAULT: Just briefly, again. Do you know what's being done in terms of cleaning up the water or beaches, and that sort of thing? Because I understand that that area is cordoned off, you can't go fishing there, is that correct?

MR. JAMMAL: Sorry, I do not know. I'll look into it. There are plans to -- we didn't see anything that they didn't mention to us, but I'll ask Mr. Cameron if I missed.

No, they didn't share with us. So I cannot say.

MEMBER BARRIAULT: Thank you.

THE CHAIRMAN: Well, there is -- again, I'm echoing what I've been reading in various reports that there are concerns about still leaching from the plant into the ocean.

MR. JAMMAL: That's a myth, sir. They have ---

THE CHAIRMAN: That's what I'm saying. They don't know.

MR. JAMMAL: --- the leaching is being controlled. As a matter of fact, that the -- not just the area where I showed the water treatment facilities is up and running. It's used -- like before, they had to structure it, and as we speak, they're building some, I believe, almost 30 or 40 containers to hold the water for a week. So they're going to have thousands of them and that reverse osmosis that's being treated. On the leaching, they're even putting zeolite everywhere in order to capture and purify the water.

THE CHAIRMAN: Okay. I think it's -- thank you, Mr. Jammal. That's very interesting and I'm sure that this is going to be a very visible kind of an undertaking that the whole world is going to learn for

many, many years to come. So, we'll keep monitoring it. Thank you.

I guess we now -- this concludes the public meeting for today and we are moving into in camera session.

MR. LEBLANC: That is correct, Mr. President. We'll need a few minutes because we are going to empty the room of everyone that has not been authorized to be part of the next sessions.

So we would ask the interpreters, the technical staff and everybody else to leave this hearing room and we will resume in two minutes when this has been done. Thank you.

THE CHAIRMAN: So, this is an honour system? We tell everybody to excuse themself?

MR. LEBLANC: We know them pretty well.

THE CHAIRMAN: We know who they are.

(LAUGHTER / RIRES)

--- Upon adjourning at 4:11 p.m./

L’audience est levée à 16h11