Canadian Nuclear Safety Commission

Commission canadienne de sûreté nucléaire

Public Meeting

Réunion publique

December 9th, 2013

Le 9 décembre 2013

York Halls
Holiday Inn Toronto Yorkdale
3450 Dufferin Street
Toronto, Ontario

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3450, rue Dufferin
Toronto (Ontario)

Commission Members present

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

Commissaires présents

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

Secretary:

Mr. Marc Leblanc

Secrétaire:

M. Marc Leblanc

General Counsel:

Ms Lisa Thiele

Avocat général :

Me Lisa Thiele

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Toronto, Ontario / Toronto (Ontario)

--- Upon commencing on Monday, December 9, 2013
at 1833 / L'audience débute le lundi 9 décembre 2013 à 1833

Opening Remarks /
Ouverture de la séance

M. LEBLANC : Bonsoir, Mesdames et Messieurs. Bienvenue à la réunion publique de la Commission canadienne de sûreté nucléaire.

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

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

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

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

I would also like to note that this proceeding is being video webcast live and that

archives of the 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.

THE PRESIDENT: Thank you, Marc.

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

First, let me tell you how happy we are to be out of Ottawa actually. We normally conduct these meetings in Ottawa and the reason is because this is the opportunity for staff to update us on an annual performance, if you like, of licensees. However, one particular licensee, there was a lot of interest in them, the GE Hitachi, and we will deal with them tomorrow. And since we were invited to Toronto we decided to take the opportunity to get out of Ottawa and that's why we're here today and we'll speak a lot more about that tomorrow.

So let me start, first of all, by introducing the Commission Members here that are with

us today.

First, on my right are Dr. Moyra McDill and Mr. Dan Tolgyesi, and on my left are Dr. Sandy McEwan, Ms Rumina Velshi and Mr. André Harvey.

We have heard from Marc Leblanc, our Secretary. And we also have with us today Ms Lisa Thiele, General Counsel to the Commission.

MR. LEBLANC: The *Nuclear Safety and Control Act* authorizes the Commission to hold meetings for the conduct of its affairs.

Please refer to the agenda dated December 4, 2013 for the complete list of items to be presented today.

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

Mr. President.

13-M48.A

Adoption of Agenda

THE PRESIDENT: With this

information, I would like to call for the adoption of the agenda by the Commission Members, as outlined in CMD 13-M48.A.

Do we have concurrence?

For the record, the agenda is adopted.

13-M49

Approval of Minutes

THE PRESIDENT: I would like now to turn to the approval of the Minutes of the Commission meeting held on August 21-22, 2013. The minutes are outlined in CMD 13-M49.

Are there any comments, additions or deletions?

Okay. None heard. Do we have approval?

For the record, the minutes are approved.

4.1 Status Report on Power Reactors

THE PRESIDENT: We will now proceed to the Status Report on Power Reactors, which is under

CMD 13-M50.

I would like to turn the floor to CNSC staff by teleconference from Ottawa. I understand that Dr. Rzentkowski is online.

Can you hear us?

DR. RZENTKOWSKI: That's correct, Mr. President.

THE PRESIDENT: Okay. Please proceed.

DR. RZENTKOWSKI: Thank you very much and good evening, Mr. President, Members of the Commission.

I would like to provide a minor update to information included in the Status Report on Power Reactors in CMD 13-M50, namely.

Section 1.3 Darlington Unit 2. The Unit is currently expected to be synchronized to the grid on December 10, 2013, so that means tomorrow.

And one more update on Section 1.5 Pickering B Unit 4 and 8. Fuelling is restored on both units and reactor power will be increased as the fuel deficit is reduced.

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

THE PRESIDENT: Okay. I hear some other licensees are online. Anybody from OPG?

MR. RAMJIST: Yes. For the record, I'm Steven Ramjist, Director of Operations and Maintenance in Darlington.

THE PRESIDENT: Okay. And this is for Darlington only.

Anybody for Pickering?

MR. BEVACQUA: Yes. For the record it's Val Bevacqua, Senior Manager Fuel Handling from Pickering.

THE PRESIDENT: For Point Lepreau?

MR. THOMPSON: For the record, Paul Thompson, I'm the Manager of Regulatory Affairs and Performance Improvement at the Point Lepreau Generating Station, and I'm joined by my colleagues Claire Harris, Manager of Health, Safety, Environment and Emergency Preparedness, and Kathleen Duguay, Manager of Nuclear Affairs and Community Relations.

THE PRESIDENT: From Hydro-Québec?

No.

MR. POULET: Dr. Binder, this is Ben Poulet, I'm the Director of the Gentilly-2 and Point Lepreau Regulatory Program Division. I received a call from the people at Hydro-Québec and they will not

be able to join this evening.

THE PRESIDENT: And from Bruce Power? Okay. So, Commissioners, colleagues? Ms Velshi.

MEMBER VELSHI: Thank you.

Let me start off by asking a question on Bruce A and the fuel defects that have been reported with the elevated Iodine-131 levels.

What are the safety implications of this, if any?

DR. RZENTKOWSKI: The reported **--** Greg Rzentkowski for the record.

The concentration of Iodine-131 reported is significantly lower than that allowed during normal operation, but nevertheless, Bruce Power is currently locating the suspect channels and then the channels will have all their fuel removed and new fuel loaded.

So in terms of what could be the underlying reasons we are postulating that it could be two reasons.

First of all, those units started very recently after refurbishment, so there could be still some debris present in the primary heat transport system which may eventually contribute to

defects of the fuel.

And the second reason could be manufacturing defects. They are not unlikely and it happens.

MEMBER VELSHI: Thank you. So it may be some time before we really know what's causing this then?

DR. RZENTKOWSKI: That's correct. We expect root cause report to be submitted by Bruce Power and also we want to know how the current situation will be rectified.

MEMBER VELSHI: Thank you.

My next question is really around both Darlington and Pickering and on the discharge of seal oil. If you can maybe expand on how the leaks were discovered and what are the implications of having this discharge, please.

MR. RAMJIS: For the record, Steve Ramjis from Darlington.

The leak from the seal oil was discovered through our routine sampling program which identified elevated levels of oil in the (indiscernible) and as a result we followed up to identify that we had added oil to the seal oil makeup tank, and so based on that we were able to identify

through detailed sampling of the two heat exchangers which would be leaking one.

In terms of contribution we made all of the notifications to the Ministry of the Environment and follow-up sampling has identified that there was no significant impact to fish or other environmental impacts as a result of the release of oil into the lake.

MEMBER VELSHI: So if this is routine sampling, the report says that the leak could have occurred over a period of two months. So what's the frequency of the sampling?

MR. RAMJIS: It is a monthly sample frequency. For the record, Steve Ramjis. It is a monthly sample frequency.

MEMBER VELSHI: And the fact that Darlington was October 6th and then less than a month later or just over a month later you see it at Pickering, is there any connection or is this just a mere coincidence? What's the cause of these leaks?

MR. RAMJIS: For the record, Steve Ramjis.

It's a different designed heat exchanger on the two plants.

The cause of the Darlington issue is

wear in the heat exchanger tubes that over time has caused the fitting of the tube sheet to the tube or it's a friction fit and over time that has gotten -- the fit has loosened.

And so we had identified this issue previously on Unit 4 during our spring outage, and our following up to replace all of these exchanger tube bundles as part of our maintenance program.

As a result of the issue we have seen, we have increased the sample frequency on all units and we have completed replacements on units 2 and 4 for the remanufactured tube bundles and tube sheets.

MEMBER VELSHI: Thank you.

THE PRESIDENT: Thank you.

Mr. Tolgyesi.

MEMBRE TOLGYESI : Merci, Monsieur le Président.

Nobody is here from Hydro-Québec. Maybe I will direct my questions to staff.

There are two leakages which were registered at Hydro-Québec and according to the communication they said:

> "Le volume et la concentration de rejets sont minimes. Donc,

un rapport d'événement S-99
n'est pas requis." (Tel que lu)

Quel est le seuil qui exige un rapport d'événement?

Dr RZENTKOWSKI : Merci beaucoup pour cette question. Je vais rediriger cette question à M. Ben Poulet, qui est le directeur des programmes de réglementation de Gentilly-2.

M. POULET : Merci, Dr Rzentkowski.

La question traite du sujet qu'est-ce qui fait un seuil de déclenchement.

Dans le cas présent, il y a eu deux déversements accidentels d'eau de chauffage d'un volume approximatif de 100 litres chacun d'une solution contenant un produit de commerce qui s'appelle Coreshield dans une concentration de 50 à 150mg par litre. On parle d'un produit, mais d'une concentration minime qui s'ajoute à d'autres rejets qui sont... qui (indiscernable) la centrale.

Il s'agit vraiment d'un rejet très minime. Donc, ça serait... On pourrait conclure qu'il n'y a aucun impact sur l'environnement, et donc, le rapport S-99 ne serait pas requis.

MEMBRE TOLGYESI : Ma question, Monsieur Poulet, c'était quel est le seuil où on exige

un rapport, 600 litres, 1 500 litres ou c'est la relation avec la concentration?

M. POULET : Le seuil n'est pas clairement défini parce que ça varie dépendant du produit qui est rejeté et non seulement du volume, mais aussi de la concentration et de l'endroit où le produit est rejeté. Donc, il y a... C'est sujet à interprétation.

Le personnel de la Commission est certainement au courant de ces rejets et pourrait demander un rapport formel S-99 si le personnel de la CCSN jugeait qu'il y avait un rejet important. Donc, dans le cas décrit, le personnel a jugé que ce n'était pas un rejet qui aurait un impact important sur l'environnement, donc, n'a pas demandé de rapport. Donc, c'est une question... C'est un peu flexible, la définition. Il n'y a pas de seuil clair, mais nous sommes tout de même au courant. Le personnel de la CCSN est toujours au courant des rejets qui sont faits.

MEMBRE TOLGYESI : Ma dernière, Monsieur le Président.

Est-ce que les deux rejets sont arrivés au même endroit ou c'est des endroits différents?

M. POULET : Encore pour l'enregistrement, c'est Benoit Poulet.

Les deux rejets ont eu lieu dans deux endroits différents dans le système de chauffage du bâtiment de services... pardon, du bâtiment administratif. Il y avait de l'entretien qui avait lieu sur le système de chauffage et on parlait de deux salles différentes à deux moments différents, et le volume approximatif était de 100 litres à chaque endroit.

LE PRÉSIDENT : Merci.

Dr. McEwan.

MEMBER McEWAN: I think this is a question for staff, Mr. President.

The Trout Toxicity Test **--** I came across that two or three times in the report on the fuel cycle as well **--** how robust is it? Because certainly, reading through that document implied that there were both false positives and false negatives derived. And how do you apply the test to two leakages of quite different volumes from the two reported in this document?

DR. RZENTKOWSKI: Greg Rzentkowski for the record.

I would appreciate if you could

redefine the question a little bit because here we find it very wide in scope and difficult to find the answer to your particular question. So once again, could you redefine it for us?

MEMBER McEWAN: So I think I'm trying to understand how sensitive and specific the test is and how well it can be applied to two quite different volumes of release.

DR. RZENTKOWSKI: Greg Rzentkowski for the record.

I think that you are referring to the toxicity test conducted by Environment Canada; is that right?

MEMBER McEWAN: Yes.

MR. JAMMAL: We've got our specialist here, Dr. McEwan **--** it's Ramzi Jammal, for the record **--** and he will provide you with an answer.

UNIDENTIFIED SPEAKER:

(Indiscernible), Environmental Risk Assessment Specialist, for the record.

The test that you're referring to is a standard Trout Acute Toxicity Test that is usually **--** it was developed by and conducted by Environment Canada Ecotoxicology Lab and basically what it looks at is exposure of the test animal, in

this case Trout, to a set concentration. In this case the test was done at 50mg per litre and it was found that there was no toxicity at all to the test fish after 96 hours of exposure.

So the assumption here is that the oil that is released in the lake would then get diluted and would not be toxic to the marine life, to the fish, based on the results of the study.

MEMBER McEWAN: So would 50mg per litre be an average calculated level of oil in the lake, a maximum or a minimum?

UNIDENTIFIED SPEAKER:

(Indiscernible), for the record again.

It's usually an average concentration that is used. Generally speaking, the levels that could occur in the lake are much lower than the test limits that are tested here and that is simply to ensure that there is no consequence to the fish from the release.

MEMBER McEWAN: Thank you.

THE PRESIDENT: Thank you.

Dr. McDill?

Monsieur Harvey?

MEMBRE HARVEY : Merci, Monsieur le Président.

Je voudrais revenir à Hydro-Québec. Il y a quelques mois, Hydro-Québec devait s'entendre avec la Commission pour les étapes qu'ils avaient à franchir pour mettre le réacteur en arrêt et ce qu'il y avait à faire à la suite.

Ma question est : Est-ce que ça été convenu, est-ce que les étapes ont été convenues, puis est-ce qu'Hydro-Québec, à l'heure actuelle, suit ce qui avait été convenu? Monsieur Poulet?

M. POULET : C'est Benoit Poulet, le directeur des programmes de réglementation de Gentilly-2 et de Point Lepreau, pour l'enregistrement.

Pour répondre à la question, il y a eu beaucoup de travail qui a été effectué, beaucoup de rencontres qui ont été effectuées entre Hydro-Québec et le personnel de la CCSN, et l'échéancier et le plan de fin d'exploitation d'Hydro-Québec pour la transition vers l'étape (indiscernable) n'est pas tout à fait complété. Ce n'est pas encore confirmé.

Donc, la réponse simple, ça serait que non, pas tout à fait, mais il y a eu beaucoup de progrès de fait dans cette voie.

MEMBRE HARVEY : Et le non, pas tout à fait, s'applique à quoi, s'applique à l'entente? Parce qu'Hydro-Québec continue à faire des opérations.

Bien, j'imagine que toutes ces opérations-là sont approuvées par la Commission, mais l'entente elle-même ou le... Quand pensez-vous qu'on va savoir exactement les étapes qui sont à franchir par Hydro-Québec? Est-ce qu'il y a une date d'arrêté?

M. POULET : Encore une fois, c'est Benoît Poulet, pour l'enregistrement.

Effectivement, toutes les étapes qui sont effectuées, les manœuvres qui sont effectuées par Hydro-Québec sont sous la surveillance du personnel de la CCSN. Où ils en sont présentement, c'est qu'ils se préparent à la vidange du système caloporteur, qui est maintenant prévue pour le début janvier 2014. Le personnel CCSN a revu et accepté ce plan d'intervention d'Hydro-Québec, et il y a plusieurs rencontres comme ça sur les travaux qui avancent durant la phase présente.

Le personnel de la CCSN a demandé plus tôt cette année, en 2013, par lettre officielle d'être informée 60 jours à l'avance de toute manœuvre impliquant soit des systèmes radioactifs ou des systèmes qui pourraient impliquer des rejets chimiques à l'environnement.

Donc, nous sommes informés assez strictement de toutes ces mesures 60 jours à l'avance,

et puis le personnel de la CCSN revoit les plans d'intervention avant que ceux-ci soient effectués. Donc, de ce côté, la surveillance est effectuée assez strictement.

MEMBRE HARVEY : Plus simplement là, quel est l'état actuel, parce que le combustible a été enlevé, les caloporteurs dépressurisés? Quel est l'état de dangerosité, si je pourrais dire, du réacteur? Qu'est-ce qu'il y a à surveiller maintenant dans le réacteur, qui est important de surveiller et qui est suivi par la Commission?

M. POULET : D'accord. Comme vous le mentionnez, effectivement, le combustible dans le réacteur a été transféré à la piscine de stockage. Hydro-Québec vient de terminer le transfert partiel des résines usées du réservoir de stockage à l'installation de déchets radioactifs solides. Ceci a été complété il y a quelques semaines. Il n'y a eu aucun événement. Nous avions effectué les inspections lors de ce transfert.

Il y a un second transfert qui va être prévu pour l'an prochain. Naturellement, ce transfert ne peut pas se faire durant l'hiver. Nous attendons le début de la vidange du système caloporteur, tel que je l'ai mentionné plus tôt.

Le personnel de la CCSN et celui d'Hydro-Québec se sont rencontrés pour discuter du travail qui sera associé à la réparation du revêtement de la paroi de la piscine de stockage, qui est en phase préparatoire présentement. Cette rencontre a eu lieu le 22 novembre et puis nous avons reçu une demande pour la vidange du système de refroidissement du (indiscernable) d'urgence, (indiscernable), qui est aussi en phase préparatoire. Le personnel de la CCSN revoit présentement ce plan d'intervention.

MEMBRE HARVEY : Une dernière question. Est-ce qu'il reste du personnel de la Commission à Hydro-Québec, à Gentilly-2? Est-ce qu'il y a encore du monde sur place?

M. POULET : Oui. Benoit Poulet pour l'enregistrement. Nous avons deux inspecteurs au site qui sont là en permanence, et le personnel d'Ottawa est aussi impliqué dans des revues de surveillance et de conformité.

MEMBRE HARVEY : Merci.

LE PRÉSIDENT : Monsieur Jammal, avez-vous quelque chose à ajouter?

M. JAMMAL : Oui. C'est Ramzi Jammal pour l'enregistrement.

Vous avez demandé, Monsieur Harvey,

la question, est-ce qu'Hydro-Québec est en conformité avec l'entente? Oui, ils respectent le protocole administratif. Monsieur Poulet a embarqué dans les détails au niveau technique. Et puis on effectue des réunions mensuelles avec Hydro-Québec pour s'assurer qu'on se trouve toujours sur la même longueur d'ondes et ils respectent toujours le protocole administratif.

Alors, dès le 12 décembre, on va avoir une autre réunion avec eux pour clarifier nos attentes et pour mettre sur place le plan réglementaire.

MEMBRE HARVEY : Est-ce qu'il est encore question d'une fermeture ou d'un démantèlement rapide ou ça été abandonné?

M. JAMMAL : C'est Ramzi Jammal pour l'enregistrement.

Hydro-Québec, comme tout est bien connu, ils ont engagé une compagnie américaine pour qu'ils puissent vérifier un déclassement accéléré. Ils attendent toujours le rapport de la compagnie américaine, et pour nous à réviser, et pour eux à prendre une décision de leur part. Alors, c'est toujours, plutôt des actions en vigueur, et puis qui évoluent avec le temps.

THE PRESIDENT: Okay. Any other

questions aside from Point Lepreau, which I think is on the next item?

Okay. Why don't we move on to the next item on the agenda, which is an Event Initial Report concerning a release of light water containing Hydrazine from the Point Lepreau Generating Station, as outlined in CMD 13-M53.

Let me first ask our staff, CNSC staff, again Mr. Rzentkowski to talk to us about this and then I'll ask Mr. Thompson for Point Lepreau to add some comments.

Go ahead.

5.1 New Brunswick Power Corporation: Release of light water containing hydrazine from the Point Lepreau Generating Station

DR. RZENTKOWSKI: Thank you, Mr. Chairman. Rzentkowski for the record.

As indicated in the NBP Status Report, a release of light water containing a low level of concentration of hydrazine was identified on November 3rd during daily monitoring of a sampling point on the station property. There was no significant impact on the environment but the event

was reported to the Commission because of its high public visibility and transparency of our regulatory oversight framework.

Mr. Ben Poulet, the Director of the Point Lepreau Regulatory Program Division, will describe the event in more detail for the benefit of those who are listening to the webcast.

Ben.

MR. POULET: Thank you, Dr. Rzentkowski. Ben Poulet for the record.

On Monday, November 4th of 2013, NB Power filed a report with CNSC site office staff to inform them that non-radioactive water containing a low concentration of dissolved hydrazine had been released from the Point Lepreau Generating Station.

Prior to November 4th regularly scheduled environmental sampling conducted by NB Power at a pre-selected storm drain sampling point in the area surrounding the station showed traces of hydrazine. Additional rounds of sampling were conducted to obtain the environmental data required to assess the release and to identify its source. The source of the leak was traced back to a condensate polisher relief valve which opened and discharged water containing dissolved hydrazine into an inactive

sump. The contents of the inactive sump were subsequently released to the environment. NB Power promptly shut down and isolated the inactive sump to prevent further releases.

Subsequent environmental sample results confirmed that the concentration of hydrazine detected was decreasing to below detectable levels and that the source was correctly identified and isolated.

The environmental impact on the area surrounding the station was minimal. The regulatory or authorized limit for discharge of hydrazine at Point Lepreau is 0.075 mg/kg. The NB Power samples taken from the Bay of Fundy shoreline showed the hydrazine concentration of 0.009 mg/kg, or one full order of magnitude below the regulatory limits.

Before we proceed with the opening remarks from NB Power on this event, I would like to make a small correction to the Event Initial Report that is in front of the Commission today. Part of the sentence at the bottom of page 1 was inadvertently deleted when the original report was converted from Word software to Adobe software. The sentence, and I will read the whole sentence from the bottom of page 1, should read:

"Hydrazine can be harmful to

> human health when exposure occurs via inhalation or ingestion. There was no hydrogen exposures to workers or the public as a result of this release because the hydrazine dissipates quickly when exposed to air." (As read)

This is the end of the correction and completes the introduction to the Event Initial Report. CNSC is available to answer questions later after NB Power speaks about this event.

Thank you.

THE PRESIDENT: Thank you.

Mr. Thompson...?

MR. THOMPSON: Thank you. Mr. Chair, Members of the Commission, thank you for the opportunity to address you on this topic. My name is Paul Thompson, Manager of Regulatory Affairs and Performance Improvement at the Point Lepreau Generating Station and I am joined here today by my colleagues Claire Harris, Manager of Health, Safety, Environment and Emergency Preparedness; Kathleen Duguay, Manager of Nuclear Affairs and Community Relations.

I want to begin by reaffirming that NB Power is fully committed to environmental stewardship and maintaining the safety of its employees and the public while providing safe and reliable electricity to our customers. I believe the CNSC staff has provided an accurate description of the events and we concur with the report.

I was prepared to describe the event, but I believe that Mr. Poulet has summarized it quite succinctly, so I would be pleased to answer any questions you may have at this time.

THE PRESIDENT: Thank you. Let me start with Dr. McDill.

MEMBER McDILL: Thank you. The second bullet on the Event Initial Report says "Prior to November the 4th". How far prior to November the 4th?

MR. THOMPSON: So, for the record, it's Paul Thompson from NB Power. We do the sampling on a daily basis, so it's within 24 hours. So we know that the sample on November 3rd that **--** the sample on November 3 in fact indicated **--**

MEMBER McDILL: Yes.

MR. THOMPSON: **--** low levels.

MEMBER McDILL: But the sample on

November 2nd did not?

MR. THOMPSON: Or the sample on November 2nd did not, it was the sample on November 3rd that indicated that there was a low presence **--** concentration of hydrazine present. So it was the sample on November 3rd that kicked everything off.

MEMBER McDILL: Thank you, that's helpful. I wonder if I could ask you **--** maybe can staff put up the simplified drawing on the screen? Is that possible?

MR. POULET: This is Ben Poulet from CNSC Ottawa. I'm afraid I cannot do that from here. I'm looking at our information technology specialist here to see whether he can or not, but I don't believe I can do that for you, Dr. McDill.

MEMBER McDILL: Okay. So there are some red lines and some blue lines and some black lines and see where the relief valve is, but I was wondering if maybe Point Lepreau could describe what should have happened and then describe what they believe to have happened.

I've got the picture in front of me, but it would be helpful if we could have a mouse trace over the lines, that would be useful, but it's not.

MR. THOMPSON: Okay. So for the

record it's Paul Thompson.

MEMBER McDILL: Not possible. Okay, so we will have to do it with words and colours.

MR. THOMPSON: I will try to describe this in a manner which anyone who does not have the figure could follow along, but also anyone who has the figure should be able to follow along.

There was a relief valve referred to as 514 which opened causing a discharge of the condensate, which is light water, non-radioactive with relatively low level of hydrazine to be discharged from the condensate system. It made its way into sump #6.

The pumps **--** what should have happened is that the sump 6 should have pumped out into the wastewater sedimentation lagoon and if that would have happened there would have been no event, because our wastewater permit allows for **--** recognizes the fact that there will be the use of hydrazine and low concentrations of hydrazines are permitted below 75 ppb to be discharged through the condenser cooling water outfall.

So that is a recognized and approved pathway by the Department of Environment **--** New Brunswick Department of Environment.

What happened in this case, however, is that the sump pumps did not operate in sump #6 and the sump overflowed into sump #7, which then subsequently overflowed into sump #8 and sump #8 discharges to the storm drain, or the drainage ditch, which is a different pathway than the approved pathway.

MEMBER MCDILL: So sump #7 isn't on the picture, so it's somewhere between 6 and 8 and in **--**

MR. THOMPSON: That is correct. There was a cascading of the sumps from 6 to 7 to 8. It's not on the picture, but the key issue is that once it got to sump 8, sump 8 is directed to the **--** was **--** and I will speak to that in a minute **--** was directed to the storm drain and that is the path by which it then got into the drainage ditch which led to the Bay of Fundy.

Now, we have subsequently taken a number of interim actions, which I can talk about later, but that is **--** you asked me what **--** to explain through the diagram what happened.

So, the relief valve opened, that charge caused the discharge, the discharge went to where it was supposed to go in sump 6 and had the sump

pumps in sump 6 been operating per design, then it would have gone to the sedimentation lagoons and there would not have been an issue, however, because the sump pumps weren't working, it made its way out into a sump that discharges to the storm drain.

THE PRESIDENT: While we have the chart, can I ask some questions? So I have two questions. First of all, why would the relief valve open? I mean, I thought that normally opens only under some unexpected pressure of some sort. So I'm trying to understand that.

And then, why are you saying there was a failure of the pump 6 that cause it to overflow? I'm trying to understand, why would they **--** if they are operational all the time, why would they fail?

MR. THOMPSON: Okay, so there's two questions. For the record, it's Paul Thompson and I will take them in order.

The first one which is the question why did the relief valve open. This valve is part of the modifications made in the mid-1980s to install a condensate polisher. A condensate polisher is designed to protect the boilers, keep it from various challenges of chemicals, so it's used to treat the boiler feedwater to ensure that it's of the highest

purity for the long-term health of the boilers.

When we looked at it there is an issue, a design issue with the overall design pressure of the condensate polisher relative to the condensate system, thus under certain operating conditions when the polisher is valved in at powers less than 35 percent there is the possibility that this valve opens.

So this is an engineering design legacy issue and it appears that this valve has opened a number of times, but it was never formally entered into our corrective action program so it wasn't recognized as an issue to be addressed. So that explains the opening of the valve.

As you have identified, that in itself wouldn't have the event without the fact that the sump pumps were not operating.

So prior to this event there were no preventative maintenance programs on these sump pumps and the maintenance orders were given a low priority relative to other plant equipment. So it wasn't recognized to the level of importance that it clearly now is recognized as. So, as a result, there wasn't functioning sump pumps which led them to the discharge being routed into sump 8, which is then pumped to the

storm drains as I had mentioned.

THE PRESIDENT: Dr. McDill...?

MEMBER McDILL: So the sump pumps have not been tested on a regular basis for how many years?

MR. THOMPSON: No, it's not a matter of not being tested, it's a matter of there's a lot of maintenance issues on the sump pumps, so sometimes they get out of service and it's a while before they're repaired.

MEMBER McDILL: So how long was it then?

MR. THOMPSON: So I don't have the exact details on **--** if you're asking me how long had the pumps in sump #6 been unavailable, I don't have that information at my fingertips.

MEMBER McDILL: Well, could you hazard a guess?

MR. THOMPSON: No.

THE PRESIDENT: What about our inspectors? I'm trying to understand, was that part of the inspection domain? Would that not be **--** particularly since those sumps are the ones that release whatever there is to be released to the environment, I thought somebody would insist that

somebody take a look at it a little bit more rigorously. Staff...?

MR. POULET: This is Ben Poulet, for the record. At the time of the event the Point Lepreau station was returning to service following a maintenance outage, so during this phase of operation there are many activities which are directly related to nuclear safety in terms of the nuclear systems that are being **--** that things are moving en masse, if you like. Things are relating **--** the systems are being put back in service, there's testing going on and our staff is involved in those activities, in the surveillance and inspection of those activities that relate directly to the nuclear system.

The system that is the subject of the Event Initial Report today is the system on the conventional side of the station, so although we do look at them from time to time, and we are monitoring them, at the time of a restart we are focused primarily on the reactor activities, and so our staff was conducting those activities and that's why we were not able to pick it up until after the fact.

MR. THOMPSON: Paul Thompson, for the record. Just in conversation with my colleagues, I understand that there was a working pump in sump #7 up

to about a week before the event.

MEMBER McDILL: So if the sump pump in 7 had activated where would it have pumped to?

MR. THOMPSON: To the wastewater settling lagoons.

MEMBER McDILL: So it would have gone to the correct **--**

MR. THOMPSON: That is correct.

MEMBER McDILL: Okay. I'll pass **--**

MR. THOMPSON: And so some of the **--** we've done a number of interim actions while we're completing the final investigation into the report, so we have a number of interim actions around the manner in which we valve in the condensate polisher to reduce the likelihood of the relief valve opening.

We have redirected where sump 8 discharges to, so it now discharges to the wastewater settling lagoon instead of to the drainage ditch, and we've got active pumps in sump 6 and sump 7 and there's longer-term actions that we are also implementing.

MEMBER McDILL: Thanks. I will pass it along. I have a couple of more, but I'll **--**

THE PRESIDENT: Okay. Ms Velshi...?

MEMBER VELSHI: I don't have

anything.

THE PRESIDENT: Mr. Harvey...?

MEMBER HARVEY: Monsieur le Président, just a clarification. What is the definition of an inactive sump?

MR. THOMPSON: For the record, it's Paul Thompson and it's a very good question because the terminology is misleading. Inactive does not mean that it's not working, inactive is relative, it means non-radioactive.

There are sumps in the station, some of which recognize that there could be the presence of a small amount of radioactive material such as tritium and they are routed to specific holding tanks where they are appropriately monitored before release and then there's other sumps that would be within the station where there could be the presence of industrial-type chemicals and they are routed to the wastewater settling lagoons.

And then the third ones are related to those associated with catch basins such as rainwater from the roof, et cetera, and they are routed to the storm drains.

MEMBER HARVEY: Thank you.

MR. THOMPSON: Inactive means

relative, means non-radioactive.

MEMBER HARVEY: Okay. In that case it's confusing because in the same paragraph we see "inactive sump" and then we say that they are automatically discharged. Well, it's a bit confusing.

MR. THOMPSON: You are correct, it is a confusing terminology. Inactive really should be interpreted as non-radioactive.

MEMBER HARVEY: Thank you.

LE PRÉSIDENT : Monsieur Tolgyesi...?

MEMBRE TOLGYESI : Merci, Monsieur le Président.

Maybe I have two or three questions on this diagram here. My understanding is that the water from condensated system is coming to the polisher columns. These polisher columns serve as a thickener where overflow is going back to the feedwater system, and underflow eventually is going to sump #6 to sedimentation separation lagoon. Am I right?

MR. THOMPSON: For the record, it's Paul Thompson. Not quite. The normal flow is when the condensate polisher **--** condensate polisher is really there as a purification **--** purification columns, so it's really **--** consider it basically you

are valving in a purification filter. So it normally would be, condensate comes in, goes through the filters, go back out into the feedwater.

There happens to be a relief valve which is necessary for overpressure protection on the system and it's that relief valve that opened and it's not routed, it doesn't have specific piping routing to location, so it just opens and then the overflow made its way into the **--** into the sump.

MEMBER TOLGYESI: So usually the polisher in mining terminology is that it's polishing the sedimentation and clear is going somewhere and the underflow which is the thicker part, okay, it's going to other place, eventually to the tailings pond or sedimentation.

What you do, you were saying that water is going back to feedwater and there are columns, that these columns will pick up some material. What do you do with that?

MR. THOMPSON: For the record, it's Paul Thompson. I'm not a specialist in the functioning of the condensate polisher, but there is **--** this isn't **--** this is removing trace amounts of chemicals, so there is not a huge discharge from the polisher. So this is not a normal pathway from that

relief valve.

MEMBER TOLGYESI: You were saying also that the overflow from #6 inactive pump **--** sump was going to sump #7 which was overflowing to sump #8. That's what you said.

MR. THOMPSON: For the record, it's Paul Thompson. That is correct.

MEMBER TOLGYESI: So why if after you said that sump pump 7 will pump back to lagoon, so how come the overflow it's going to one side which is clear, another one **--** usually the role of this sump is to pump back to lagoon.

MR. THOMPSON: For the record, it's Paul Thompson. Had the pumps in either sump 6 or sump 7 been working it would have **--** the effluent would have been pumped out into the wastewater settling lagoon, but because there was no **--** the pumps in sump 6 and 7 were not working, the discharge made its way into sump 8 and sump 8 had working sump pumps, but they were directed towards the storm drains and the drainage ditch.

That is one of the changes we have made now, as I mentioned before, the discharge of the pumps in sump 8 are now directed to the wastewater settling lagoons.

MEMBER TOLGYESI: So you are saying that the sump system did not work for what, for a week or so?

MR. THOMPSON: Roughly, from what I understand is that **--** I can't say for how long the pumps in sump 6 were unavailable, but my understanding was there was working pumps in Sump No. 7 prior to about a week before the event.

That is the best of my understanding at the moment.

MEMBER TOLGYESI: Now there really **--** well, 514 it's operated automatically or it's by human intervention?

MR. THOMPSON: For the record, it's Paul Thompson.

It is a pressure-actuated valve. So if the pressure exceeds a certain amount it will open. So it is an automatic opening valve on **--** over pressure.

MEMBER TOLGYESI: And so what I understand is that you are saying that it was going through **--** under a drainage system. It happened the first time. It didn't happen to your station before.

It's the first time and effectively you learned from it and you corrected it.

MR. THOMPSON: That is correct. This is the first time to the best of my knowledge.

It's Paul Thompson, for the record.

As you may be aware, this routine daily sampling of this drainage ditch was an action that we began based on our operating experience back in 2011.

MEMBER TOLGYESI: And when you are talking about under **--** a drainage network **--** it consists of these sump overflows or it's something else?

MR. THOMPSON: It's a combination of where the sumps overflow as well as the collection of **--** sorry. For the record, it's Paul Thompson.

Yes, it's how the sumps are interconnected. That was **--** there were some details on how these sumps were interconnected that also did not appear on a flow sheet. So that's learning from the event as well.

MEMBER TOLGYESI: Okay.

Dr. McDill.

MEMBER McDILL: Where would things have gone if the pumps in Sump 8 had been not working?

So you had a failure in 6. You had a failure in 7. What if you had had a failure in 8,

then what?

MR. THOMPSON: For the record, it's Paul Thompson.

I believe it may have gone back to the lagoons, but I'm not sure. I would have to follow up on that.

I think what the important thing is now is we understand that there is a pathway from 6. If the sumps don't work there is a clear pathway from 6 to 7 to 8.

We have increased how we view the maintenance on these sump pumps. We have working pumps in 6 and 7. As well as, we have rerouted where Sump 8 goes. Sump 8 pumps to the settling lagoons.

So we believe that this is important to get these sumps configured in the way that we now have them because this will make sure that if there is any other type of leak from another system that it's not going to make its way to the drainage ditch, to the storm drains.

THE PRESIDENT: It seems to me that **--** I mean the staff report here says that there is no need to come back to us.

I think that I'd like to see a root cause report to summarize all the lessons learned from

this, filing with us, with the Commission. Are you intending on doing this?

MR. RZENTKOWSKI: Yes, that's correct. We'll follow up on the root cause report.

But we are very happy that New Brunswick Power already undertaken **--** decided to undertake the steps and rectify the problem. So as you know from the standpoint of the effluents it's now a closed loop. Everything will end up at the lagoon.

THE PRESIDENT: Right. But I mean, the lessons learned in all this, you are going to produce a report, right?

MR. RZENTKOWSKI: Yes, we will produce the report.

But what I'm trying to say that the action has been taken already to correct the main problem. The main problem is or was that this effluent loop was open.

THE PRESIDENT: Okay. I'd like to move on. Thank you. Thank you very much.

5.2 CancerCare Manitoba:
Exposure above regulatory limit of a non-Nuclear Energy Worker at CancerCare Manitoba

THE PRESIDENT: The next item on the agenda is the Event Initial Report concerning an exposure above the regulatory limits of a non-nuclear energy worker at Cancer Care Manitoba, as outlined in CMD M54.

I guess representatives of CNSC Staff are in attendance and we have Dr. Fife from Cancer Care Manitoba. He is also joining us via teleconference.

Dr. Fife, can you hear us?

DR. FIFE: Good evening. This is Dr. Fyfe here.

Yes, I can hear you. Good evening to the President, the staff of the Commission and other Members present and anyone who can hear this hearing.

THE PRESIDENT: Okay. You're coming through loud and clear. So thank you for that.

Mr. Régimbald, the floor is yours.

M. RÉGIMBALD : Bonsoir, Monsieur le Président. Bonsoir, Mesdames et Messieurs les Commissaires. Je suis André Régimbald, directeur général responsable de la réglementation des substances nucléaires.

I'd like to present my colleagues who are with me to present this event report: Ms Kavitha

Murthy who is the Director of the Accelerators and Class II Facilities Division and Ms Melanie Rickard who is the Acting Director of the Radiation and Health Sciences Division.

This event report is in respect of an exposure above regulatory limit of a non-nuclear energy worker at Cancer Care Manitoba. In September 2013 the licensee, Cancer Care Manitoba, reported to the CNSC that the radiation dose report for one of its employees, a radiation therapist, indicated that this person had received a dose of 1.26 millisieverts during the period of March 1st, 2013 and May 31st, 2013.

The employee in question was not designated as a nuclear energy worker and, therefore, the dose reported was above the applicable regulatory dose limit of 1 millisievert per year for a member of the public.

The person has worked as a radiation therapist with Cancer Care Manitoba since 2003 and this was the first time she had received a recorded dose. None of the other workers performing similar tasks received a similar dose during the same period of time. It is noted that workers in radiation therapy have at least one other therapist as a partner

during patient treatment but occasionally -- but no unusual doses were received by any other individuals.

The therapist did recall that her dosimeter had fallen off during patient treatment. However, in response to this event the licensee took all actions required under the ***Radiation Protection Regulations***, removed the employee from work that could have added to the dose received and carried out an investigation to determine the cause of the exposure.

The licensee made a commitment to conduct enhanced reviews of future dosimetry readings for the employee. The individual has since changed her wearing practice of the dosimeter so that it is securely fastened to her person.

The CNSC has reviewed the investigation report and the actions already taken and/or proposed by the licensee and has deemed them to be appropriate and sufficient.

The dose reported is not unequivocally associated with the dose of the person. When taking into account the dose history of this individual and the doses received by other workers conducting the same type of work, it is likely that the dose of 1.26 millisieverts was non-personal.

Hence, given the result of the

licensee's investigation and the commitments made by the licensee to monitor the individual's dose in the future, the CNSC informed the licensee that the individual could return to her normal duties and, in conclusion, no additional reporting to the Commission Members is anticipated.

Thank you very much. Staff is available for questions.

THE PRESIDENT: Before we get into questions I'd like to turn to Dr. Fife if you have any additional comments.

DR. FIFE: Not at this time. Thank you.

THE PRESIDENT: Okay. So let's start the question period.

Dr. McDill.

MEMBER McDILL: Thank you, just one question.

How do these medical workers normally affix the dosimeter?

MS MURTHY: Kavita Murthy, for the record; Director, Accelerators and Class II Facilities Division.

They usually wear an overcoat or scrubs on top as a normal part of their duties and

they would attach it to that. Sometimes they wear a lab coat. I'm not sure what the practice is at Cancer Care Manitoba. Dr. Fife may be able to provide that.

DR. FIFE: This is Ingvar Fife speaking.

The dosimeters have a small metal clip which is often affixed directly to a lab coat or to a lanyard which also holds identification badges. It may also be placed within a pocket of a lab coat as well. But those are the most common ways of wearing the dosimeters.

MEMBER McDILL: But this individual used a different technique or in what way did it come off occasionally?

DR. FIFE: There's a dosimeter with an attaching device on it. The device is made up of a piece of red plastic with a metal popper. The popper was secured to the lanyard. These are not that robust and occasionally come loose on their own accord with a little bit of mechanical stress.

The fix that we've adopted here for this member of staff is to secure the dosimeter with a metal ring bind device directly onto a lanyard. This appears to be a much more secure and robust way to wear the dosimeter for this individual.

MEMBER McDILL: So is this practice now going to be used by other workers in the same **--** of the same type?

DR. FIFE: Some have adopted this practice but we're letting staff members wear this in a variety of ways. What's important is that they continue to wear the dosimeter and we are allowing a variety of options in the way that they do assess their own doses.

We have reviewed other fixing mechanisms supplied by our dosimetry provider as well. That's ongoing at the moment.

MEMBER McDILL: Thank you.

THE PRESIDENT: Thank you.

Ms Velshi.

MEMBER VELSHI: Thank you.

The incident was reported to staff in September, and the exposure period was March to May.

Dr. Fife, can you perhaps comment why would it take this long to report it to staff?

DR. FIFE: We **--** the monitoring period is a quarterly period to monitor staff doses, and it takes a few weeks to receive the reports from our dosimetry provider.

As soon as we received the report, we

made our own notification to the Commission on the day that we received that report. It does take an amount of time to receive reports from our dosimetry provider.

I can only imagine that during the summer periods, this could have been delayed a little bit from -- because of staff reductions, perhaps, at the provider and also at our institution here.

MEMBER VELSHI: Staff, any comment on that? Would you be surprised at this lag of time?

MS RICKARD: Melanie Rickard, Acting Director of the Radiation Health Sciences Division.

In this particular case, it was quite a long period of time, approximately 80 days, between the receipt of the dosimeters -- well, perhaps a little bit less, actually -- between the receipt of the dosimeters and the report.

However, I should point out that the amount of time that it takes to send back the dosimetry results is between a licensed dosimetry service and the licensee in their service standard. So there aren't any regulations per see that speak to this.

Often, we see between 30 and 90 days.

MEMBER VELSHI: Yeah, my concern was

that if this is -- had been a real dose that the individual could still be getting additional exposure in the interim, and is that time lag appropriate.

My second comment or question is, one of your corrective actions is to monitor the individual's dose in the future.

How would this monitoring be any different than what you would do for any other of your employees, Dr. Fife?

DR. FIFE: We have looked at other ways to monitor our staff here with a variety of alternative dose meters. We did not adopt any such practice with this individual apart from sending her dose meter off in the next monitoring period that followed the monitoring period in which she had an exposure immediately finishing that time.

The other matters that we have used is with an active dose meter. We did not use this in this circumstance.

MEMBER VELSHI: So help me understand this. With this other method, there is immediate feedback on what the dose has been, then?

DR. FIFE: That's correct. The active dose meter will provide additional readouts.

MEMBER VELSHI: And so if this

individual receives, unlikely as it may be, any additional recordable dose, what would that mean? Would they be taken off such work in the future?

DR. FIFE: It depends on the level of the dose and then we'd have to ask the Commission whether that was a reasonable action.

MEMBER VELSHI: I'm just wondering, are these controls not ones that you actually design up front that, going forward for this individual who may not have, but at least officially has exceeded the public dose limit for the year, should not be getting any further recordable dose; correct?

DR. FIFE: The individual has returned to a full set of duties, so there is still a very low potential that they receive a dose.

Working practice here and our experience of all our staff being monitored, this is a very low potential to receive a dose.

When she was removed from standard practice, we removed her from an area which we believed to have a relatively higher potential to receive a dose, and that was an area working with radioactive sources.

Most of the staff only work with linear accelerators, which are turned off and don't

have the opportunity to produce radiation all the time.

THE PRESIDENT: Dr. Fife, why wouldn't you designate this particular employee as a nuclear worker? I mean **--**

DR. FIFE: We do not have any workers at CancerCare who was designated as such. Our dose **--** our target dose here that we use for our design of existing facilities have been set at .5 millisieverts per year for those occupationally exposed and for members of public visiting CancerCare, our dose **--** target dose level is at .5 millisieverts per year, so we choose not to have any nuclear energy workers on site at CancerCare Manitoba.

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

Ms. Velshi asked the question, a very valid question, about the frequency of reporting. Even though Ms. Rickard spoke about the commercial agreement between the licensee and the service provider under the licensed dosimetry, but under our regulation, the licensee must ascertain the dose of the workers before they issue the dosimeter and before they establish the periodicity of reporting.

So in other words, if the licensee

determined that the potential exposure to the worker from the duties assigned to the worker at higher level, the frequency of reading the dosimeter can vary from weekly to monthly to quarterly.

In this case, based on the design of the facility itself and the vaults, so they're ascertaining the dose that the workers does not need to be designated as nuclear energy workers for potential exposure based on the activities assigned to them.

However, the -- two things that we have to keep in mind here is if there is a suspicion of a dose to the individual, the licensee, which is, in this case, CancerCare Manitoba, can submit the dosimeter for an urgent reading and, at times, come back in 24 hours or within a week.

And if the event occurs during routine practice or work hours without the employee reporting the fact that the dosimeter fell or was found in the room, then it goes through the normal process.

I just want to clarify the thing that the regulation -- you asked the question, do we have regulation -- obligates the licensee to ascertain the dose before they apply -- provide monitors to the

workers and establish the frequency of monitoring.

MEMBER VELSHI: Thank you.

MEMBER McEWAN: So I'm right in thinking, Dr. Fife, that you would not expect a radiation therapist to have, really, any positive badge readings?

DR. FIFE: That's right.

MEMBER McEWAN: So did I understand you to say that this therapist had actually been working in brachytherapy during the period of this monitoring?

DR. FIFE: No. May I correct that?

The member of staff during the monitoring period was working in a linear accelerator area, not in the brachytherapy area. We removed them from being scheduled in the brachytherapy area following our realization that there was a dose recorded.

MEMBER McEWAN: So if a badge had fallen off and remained in the room during the administration of a fraction of radiation therapy, what would the dose to that badge be?

DR. FIFE: Of course, it's a wide bracket there, depending on where the badge fell, how close to the radiation beam it landed. However, it

would be of the order of millisieverts.

Certainly when we've done estimations when it was suspected that a badge was left in a room during a treatment, they've come back, our estimates of doses, around about a millisievert, usually slightly less than a millisievert.

That's with the dose being within a radius of the central beam of about one to two metres.

MEMBER McEWAN: So similar to what this worker got.

DR. FIFE: Yes.

MEMBER McEWAN: So is there any chance that this individual could have spent any significant amount of time with somebody who'd received any form of systemic radiation therapy and was close to that individual for a long period of time?

DR. FIFE: No, we don't believe so.

MEMBER McEWAN: Okay. Thank you.

THE PRESIDENT: Thank you.

Mr. Harvey?

Mr. Tolgyesi?

MEMBER TOLGYESI: No.

THE PRESIDENT: Anybody else?

Final words to staff.

MS MURTHY: Kavita Murthy, for the record.

I just wanted to, for the information of the Commission Members because you asked the question, point out that the vast majority of radiation therapy **--** therapists who work on linear accelerators actually get zero doses on their radiation badges and the average dose in 2008 for this whole industry was 0.08 millisieverts per year. And the average dose **--** non-zero dose was 0.3 millisieverts per year for this industry, so it's historically an industry that gets very low doses.

THE PRESIDENT: Okay. Now you piqued my curiosity.

So you give them dosimeter; right? Why?

MS MURTHY: It's the licensee who chooses to give them a dosimeter.

THE PRESIDENT: Well, I assume you give them a dosimeter because that's for safety precaution.

What's the problem with designating anybody, okay, a dosimeter a nuclear energy worker? What's the additional work required to do this?

MS RICKARD: Melanie Rickard, Acting

Director of the Radiation Health Sciences Division.

I just want to echo what Kavita said. Ultimately, it's the licensee's decision to designate the workers as NEWs or not. The definition of a nuclear energy worker is a reasonable probability of exceeding or reaching one millisievert a year. And as you heard, the doses are historically very low.

Now, it is their decision whether they want to give their workers dosimeters or not. They must ascertain doses to workers who are exposed to radiation, so in a lot of ways, this is a very direct way of them doing that. And in addition, a lot of people like the assurance of wearing the dosimeters and seeing the results come back as zero.

Obviously, in a case like this it sort of has the opposite effect. But generally speaking, a lot of licensees do badge their workers, even if they're not going to get one millisievert a year.

THE PRESIDENT: But my question was different. If you designate somebody, a nuclear energy worker, is it additional administrative things that you have to do?

MS RICKARD: Yes. In certain respects. There are requirements of the ***Radiation***

Protection Regulations that speak to what needs to be done if someone is designated as a NEW.

THE PRESIDENT: Dr. McEwan, do you want to educate us all?

MEMBER McEWAN: No, no, this is **--** is there any difference in the dose from somebody working in the "brachytherapy suites", and somebody working in a linear accelerator, and is that likely to produce a higher dose for somebody who spent a year working in the brachytherapy suite?

MS MURTHY: Kavita Murthy, for the record. As a group, what NDR monitors is radiation therapists, and in that group they don't distinguish between people who are working on machines, linear accelerators versus brachytherapy machines. But generally because of the nature of the work involved in brachytherapy we would think that any non-zero dose that would come, would come from probably people who are working primarily in brachytherapy.

MEMBER McEWAN: So, should that inform us, going forward, in terms of **--** as brachytherapy is becoming a more common clinical practise, should that inform us then to trying to discriminate between the two groups of workers?

MS MURTHY: Kavita Murthy for the

record. It is the licensee who can decide to badge that group and monitor them separately. We don't really require them to just make that distinction at this point in time.

MR. JAMMAL: Ramzi Jammal, for the record. Let me clarify a couple of things. Mr. President, you're asking the question, why don't we classify every worker to be a nuclear energy worker?

First of all, they are based on ALARA principle, as low as is reasonably achievable. So, the design of the work and **--** and the dose expected from the performance of the worker to be below the general public's, then there is no need to have them nuclear energy workers **--** because, administratively, even though there is no added burden except signing forms, declaring the person to be a NEW and so on and so forth under the ***Regulation***, the precautionary principle, and ALARA principle, if the worker is not going to reach that level, there is no point declaring them nuclear energy workers. Again, the burden is not that great, it's just more of a practise with respect to a lot of principles.

On the **--** Dr. McEwan's question is very valid and it's **--** now, I'm an old-timer in this business. There used to be a brachytherapy

classification of workers under the NDR. I now have to rely on my colleagues if that category still exists, because it is very well-known with respect to the brachytherapy that the dose to the worker is always higher. And, of course we have two types of brachytherapy: direct brachytherapy where the dose is a lot higher than the remote brachytherapy because when the worker enters the room, the source is retracted. So all these things, the licensee must ascertain the dose based on the design and the practise. And, if needs to be, they will put in place the classification.

In addition to the regulatory dose limits the licensees must establish action levels which is an indicator if there is a loss of control with respect to the monitoring of the workers. And I don't have the value of Cancer Care Manitoba with respect to the actual levels. So, we have all these layers with respect to determining and doing two things: First of all, assessing the dose to the worker, and then establish action levels based on the industry norm so that it's being monitored to make sure there is no loss of control.

THE PRESIDENT: But are all those, for example in Cancer Care all the workers, are the

dosages reported to the NDR -- so they are already on -- they are already on NDR as what? As people with measurable dosages, but they are not nuclear energy workers?

MR. JAMMAL: Ramzi Jammal for the record. Sorry, I'll pass it on to the colleagues afterwards. If the individual is wearing a dosimeter that is read by a licensed dosimetry then they -- they report it to the NDR.

We've got licensees -- I don't know how many are in the medical field, but for example, certain portable gauge licensees do not wear a dosimeter because of the practise that they do, the likelihood of getting a measurable exposure is very, very low. So, if the individual is wearing a dosimeter that is read by a licensed dosimetry service that dose is being reported to the NDR.

The question you're asking is, what is the average dose per year? Ms Murthy has gave the values of below detectable. There is no such thing as zero in the radiation detection, it's below the minimum detectable limit which is assigned a number of zero, if I can say this. And then the industry average is .08, I believe Kavita said.

So, we take -- all these are taken

into consideration. But we go back to the main principle, is, the licensee is responsible to ascertain the dose and categorize their workers and that's why we have the two categories. The general public which has one millisievert -- it's an occupational dose and that's what we have to keep in mind.

THE PRESIDENT: All right. I think there is room for discussion not here and not now, but to discuss some of these concepts.

Anybody else would like to discuss anything else on this?

MEMBER McEWAN: I'm going to come back to this in the next --

THE PRESIDENT: Okay. Dr. Fife, do you have any other additional final comments?

DR. FIFE: If I may, just on how we classify our workers here, just the terminology. We call our -- that is, the workers who wear dosimeters as those people who are occupationally exposed, they have a potential to receive a radiation dose, and we call them radiation workers as opposed to nuclear energy workers.

THE PRESIDENT: Okay. But they both, whatever dosage they receive get registered in the

NDR; is that correct?

DR. FIFE: That is correct.

THE PRESIDENT: So, I don't understand why we have to distinguish between those two categories. But, again, I'm showing my ignorance here and I'll take it offline to try to be educated with this.

So, thank you. Thank you for your comments. And we will move on.

Okay, we are going to take about a ten minute break just to allow you to get up, and we'll come back in ten minutes. That will make it 8:10.

--- Upon recessing at 7:56 p.m. /
Suspension à 19 h 56
--- Upon resuming at 8:13 p.m. /
Reprise à 20 h 13

THE PRESIDENT: Okay. We are ready to proceed.

The next item is Nuclear Substances in Canada: A Safety Performance Report for 2012, as outlined in CMD M52, and I understand M. André Régimbald will make the presentation.

Please proceed.

6.1 Nuclear Substances in Canada:
A Safety Performance Report for 2012

M. RÉGIMBALD : Bonsoir, Monsieur le Président et Membres de la Commission. Je m'appelle André Régimbald. Je suis le directeur général responsable de la réglementation des substances nucléaires.

Nous vous présentons ce soir le Rapport sur le rendement en matière de sûreté des utilisateurs de substances nucléaires, d'équipement réglementé et d'installations nucléaires de catégorie 2 au Canada pour l'année 2012.

Nous sommes très fiers de vous présenter ce rapport qui constitue le quatrième rapport de sûreté produit jusqu'à maintenant par la CCSN, le précédent rapport vous ayant été présenté en janvier 2013.

Production of this safety performance report continues to be an outstanding achievement for the Canadian Nuclear Safety Commission as we continue to be the only nuclear regulator in the world to be producing such a comprehensive report on the safety

performance of nuclear substances and equipment users in industrial, medical, commercial and research in academic settings.

Following the presentation today, our intent is to have this report published on the CNSC external website in March of 2014.

J'aimerais vous présenter mes collègues qui sont avec moi ce soir pour la présentation du rapport.

Tout d'abord, Mme Isabelle Tremblay, agente de programme dans la Division des autorisations de transport et du soutien stratégique; M. Sylvain Faille, directeur des Autorisations de transport et du Soutien stratégique; Ms Kavita Murthy, Director of Accelerators and Class II Facilities; Mr. Peter Fundarek, Director of Nuclear Substances and Radiation Devices Licensing; Mr. Henry Rabski, Director of Operations Inspection Division.

Il y a d'autres membres du personnel de la CCSN qui sont présents dans la salle et à Ottawa en appui à l'équipe.

Je passe la parole maintenant à madame Tremblay, qui fera la présentation en anglais.

MS TREMBLAY: Isabelle Tremblay. This presentation will provide you with a brief

overview of the changes incorporated in this new edition of the report and a description of the metrics used to measure the safety performance. Then, I will go over the results which are summarized here in this slide.

The report covers 2515 licences among four nuclear sectors: medical, industrial, academic and research, as well as commercial. And it includes results from about 1500 inspections.

We noticed good compliance performance from licensees in 2012 with improvements in the medical and industrial sectors for operating performance. And improvements in the medical as well as the academic and research sectors for radiation protection.

For inspections that resulted in ratings of below requirements, or unacceptable, the CNSC entered that all non-compliances were properly addressed and corrected by the licensees.

The report also includes information related to occupational doses which were low and followed constant trends when compared to previous years. In fact, they were well below the regulatory limit of 50 millisieverts per year for a nuclear energy worker.

There was a small increase in the number of reported events in 2012 as well as an increase in the number of issued orders, namely, in the industrial sector.

Overall, licensees offered a good safety performance.

Now, regarding the structure of the report, there were a few changes made in this edition. A section has been added to provide an overview of the performance results with sector to sector comparisons. The number of dose graphs has been reduced by focusing on nuclear energy workers.

The description of the safety performance measures and the compliance rating system has been moved to an appendix, and a new appendix to provide detailed reporting for the two high-energy research particle accelerators covered by this report has been included.

This year there are two new sub-sectors in the commercial sector: The servicing of radiation devices and prescribed equipment, as well as the distribution of nuclear substances.

This edition also contains information on the safety performance of the CNSC laboratory as a licensee.

The next slide will summarize the performance measures used for this industry report.

The performance measures are the inspection ratings obtained from inspections conducted by the CNSC for operating performance, radiation protection and sealed source tracking activities.

There are two additional performance measures used: Occupational doses, which are extracted from annual compliance reports submitted by licensees; and, events reported to the CNSC.

The report also includes enforcement activities in the form of issued orders and decertification of exposure device operators. These regulatory actions are also published on the CNSC website as they are issued.

The next slides will present the information related to occupational doses. This table summarizes the reported events relating to radiation doses.

There were three cases where a worker may have been subjected to a dose in excess of regulatory limits. One of them involved a radiation therapy worker not designated as a nuclear energy worker and who may have received 2.17 millisieverts which is in excess of the one millisievert regulatory

dose limit for a member of the public.

The second one was related to a nuclear energy worker who may have been subjected to 75 millisieverts which is in excess of the 50 millisieverts regulatory limit for a nuclear energy worker.

And the last one was related to a portable gauge user not designated as a nuclear energy worker who may have received 1.16 millisieverts.

In all three cases licensees acted in accordance with the requirements of the ***Radiation Protection Regulations***, that included informing the workers and conducting an investigation of the situation. In all cases, the licensee concluded that the doses were likely non-personal, which means the dosimeters may have been exposed while not being worn on the person.

The CNSC reviewed the information submitted by the licensees and found that all had met their obligations with respect to the requirements of the ***Radiation Protection Regulations***. In all cases there were no health consequences to the individuals involved.

This graph presents the occupational doses received by nuclear energy workers with all four

sectors combined. The dose information is extracted from the annual compliance reports submitted by licensees.

Following a reallocation of CNSC resources we were able to analyze a greater number of compliance reports. As such, the report includes dose data pertaining to 10,305 nuclear energy workers in 2012 compared to about 7000 in 2011. Even with this increase in data coverage the results are relatively consistent with the previous reporting years.

Nuclear energy workers are subject to a regulatory dose limit of 50 millisieverts per year and we can see that they all received doses significantly less than the limit. 84.5 percent of them received less than one millisievert. 14 percent received between one and five millisieverts and 1.5 percent received between five and 20 millisieverts.

Now, the next slide will present doses to workers who are not designated as nuclear energy workers. These workers are referred to as other workers in the report.

This graph combines, again, all four sectors and similar to the previous graph it includes dose data of a larger number of other workers with 10,300 in 2012 compared to about 8700 in 2011.

Again, here, results are consistent with pervious reporting years.

These workers are subject to a regulatory dose limit of one millisievert per year, which was not exceeded in 2012.

The data shows that 98.8 percent of them received less than .05 millisievert and 1.2 percent received between 0.5 and one millisievert.

Now, the next slides will present the performance results for each of the four sectors. I will start with the compliance performance of the medical sector licensees. On the slide you can see pictures representing the sector. Examples of radio isotopes that are used in the diagnostics of various medical issues, a CAT, undergoing a nuclear medical scan, and medical linear accelerator used in radiation therapy.

Next are the inspection rating results. With respect to operating performance, the medical sector was generally compliant and saw a slight improvement in its compliance level compared to 2011. In fact, 90.7 percent of the inspected licensees were found to be compliant in 2012, an increase of 4.7 percentage points compared to 2011.

Now, moving on to inspection ratings

for radiation protection. As the figure indicates, compliance ratings for radiation protection have been steadily improving with the proportion of inspected licensees found to be below requirements or unacceptable down by 16.4 percentage points in 2012 compared to 2008 and there was a 1.1 percentage point improvement in compliance compared to 2011.

This graph presents the results related to the sealed source tracking activities. There are fewer inspections in this area as only licensees in possession and control of high risk sealed sources are subject to their mandatory tracking requirements. Compliance levels were strong, with 100 percent compliance over the past three years.

This slide presents the number of reported events in the medical sector. There was a slight increase in their number, with 21 reported events in 2012 compared to 19 in 2011. This increase was distributed amongst various event types. Of the four reported events of missing nuclear substances, all of them involved low risk or very low risk sealed sources.

The next slide will summarize results for the sector. The compliance level of medical sector licensees has continuously improved compared to

previous years in both operating performance and radiation protection. There was a slight increase in reported events and no orders were issued to these licensees in 2012.

Based on the results presented, CNSC staff concludes that the use of nuclear substances in the medical sector is safe.

This ends the presentation for the medical sector.

Now, moving on to the industrial sector. Here are some pictures of different types of uses of nuclear substances in this area. On the left is an oil well logging site, the center is a fixed gauge used to determine the operational parameters of the flow inside the pipe and on the right is a CNSC inspector conducting a field inspection of a portable gauge.

Next will be the industrial sector results review. This slide presents the operating performance inspection ratings for the industrial sector. Licensees continue to improve their compliance level with an increase of 2.5 percentage points in 2012 compared to 2011.

The proportion of inspected licensees that were found to be below requirements or

unacceptable was down by 12.5 percentage points in 2012 compared to 2008, an indication of the continuous improvement and compliance for the safety area. The compliance level related to radiation protection gathered from 900 inspections remained constant in 2012 compared to 2011, with 85.7 percent of inspected licensees found to be compliant.

And now with respect to sealed source tracking activities, the compliance level has slightly decreased in 2012 compared to 2011, but was still strong with 92.9 percent of inspected licensees found to be compliant.

This slide presents the events reported by licensees in the industrial sector. There was a slight decrease in the number of reported events, with 77 of them in 2012 compared to 83 in 2011. Even though the number is relatively high, it is in line with the 1,451 licences in this sector. The majority of reported events were related to damaged devices, 18 of which were portable gauges hit or run over by vehicles on construction sites. There were no reported leakage of sealed sources following these events.

There were eight instances of missing or recovered nuclear substances, two of them were

reports of found nuclear substances and of the six that were related to missing nuclear substances, five of them were recovered shortly after being reported missing. There was one that has not been recovered yet and it involves a portable gauge containing a low risk sealed source.

There were 16 orders issued to licensees in the industrial sector, a slight increase compared to 2011. Of the 16 orders, nine were issued to portable gauge licensees, an increase from the six orders issued to them in 2011. This increase is in part the result of a greater number of field inspections conducted by CNSC inspectors. These field inspections are conducted on-site where the inspectors can observe workers and identify potential health and safety risks. All of the orders have now been closed after the CNSC has reviewed the corrective measures implemented by the licensees and found them satisfactory.

The next slide will provide a summary of the performance results for this sector. We have noticed a continuous improvement in compliance level compared to previous reporting years. There was a slight decrease in reported events compared to 2011 and an increase in the number of issued orders, in

particular to portable gauge licensees. All of the orders have since been closed.

Based on the results presented, CNSC staff concludes that the use of nuclear substances in the industrial sector is safe.

We will now be presenting an overview of the results for the academic and research sector. Here the nuclear industry not only uses sealed sources, but also open sources as shown in the picture on the left. It also uses radiation devices and accelerators for teaching and research purposes. A high-energy research particle accelerator is shown here on the right.

As the graph indicates, this sector has maintained its inspection ratings for operating performance in the past three years, with 84.5 percent of inspected licensees found to be compliant in 2012. A similar trend is shown here for the radiation protection inspection ratings. This sector has maintained its compliance level between 78 percent and 81 percent in the past three years.

There were 40 inspections conducted among the academic and research sector licensees that included a review of sealed source tracking activities and all of the inspected licensees were found to be

compliant in this area.

In 2012 there were eight reported events in this sector, three of which were related to missing nuclear substances. One case was a report of a found check source of very low risk used for demonstration purposes. The other two cases were reports of missing nuclear substances. One case involved a radiation device containing a very low risk sealed source that has not yet been recovered. The other case involved the CNSC laboratory. There were three very low risk check sources left behind in a room after a training session that were recovered shortly after.

An internal investigation was conducted, as well as an inspection, to verify the compliance of the CNSC laboratory with the regulations and the licence. The CNSC staff found that all of the corrective actions had been adequately implemented.

The next slide will summarize the results for the academic and research sector. The compliance level of these licensees was maintained or slightly improved compared to previous years. There was a slight increase in the number of reported events and no orders were issued in 2012.

Based on the results presented, CNSC

staff concludes that the use of nuclear substances in the academic and research sector is safe.

Now, moving on to the commercial sector, the last one. On the left-hand side is a picture of a cyclotron, a common type of isotope production accelerator used to produce isotopes for diagnostic medical imaging. On the right-hand side is a medical linear accelerator being serviced.

In the commercial sector there was a decrease in the level of compliance related to operating performance with 84.9 percent of inspected licensees found to be compliant in 2012 compared to 92.7 percent in 2011. This decrease is mainly due to a greater number of field inspections conducted by the CNSC inspectors in the servicing subsector. These field inspections were made possible by requesting licensees to notify the CNSC of their servicing activities ahead of time, therefore allowing the inspectors to be present while the work was being performed and, as a consequence, more operating performance non-compliances were noted.

Now, with respect to radiation protection inspection ratings. The commercial sector has maintained a constant trend over the past three years with about 91 percent of inspected licensees

found to be compliant. The ratings for sealed source tracking activities were strong, with all licensees found to be compliant in 2012.

There was an increase in the number of reported events in the commercial sector, mostly related to an increase in reported events in the processing of nuclear substances used for medical purposes, as well as an increase in the packaging and transport-related events. Half of these events involved packages not fully compliant with the regulations. Three of them were administrative in nature, while the other four involved contamination inside the packages.

In all cases licensees implemented adequate response measures to mitigate the impacts of the events which were all reviewed by CNSC staff. In addition, none of the packaging in transport-related events resulted in the release of nuclear substances contained inside the packages. Licensees followed proper procedures to handle the packages and implemented corrective actions to prevent recurrence.

There was one order issued to a licensee in the commercial sector in 2012 and the order was closed once CNSC staff was satisfied with the corrective actions implemented by the licensee.

The commercial sector summary slide is presented next. In 2012 there was a slight decrease in the compliance level for operating performance, while it remained constant for radiation protection. There was an increase in the number of reported events and one order was issued to a licensee and was closed.

Based on the results presented, the CNSC staff concludes that the use of nuclear substances in the commercial sector is safe.

To conclude with the overview of the safety performance results included in this report, there were positive gains in compliance levels in 2012 with the exception of a slight decrease in the operating performance for the commercial sector. Doses to workers were well within regulatory limits, essentially at the same level as those reported for 2011. There were three cases where workers may have exceeded those regulatory limits, but all three were deemed to be likely non-personal.

As for the reported events, none of them resulted in doses in excess of regulatory limits. In addition, there were no releases of dispersible nuclear substances that had an adverse radiological impact on the environment and licensees implemented

appropriate response measures.

There was an increase in the number of issued orders in 2012, more specifically in the industrial sector, and there were no orders issued to the medical as well as the academic and research sectors.

The CNSC continues to take proactive measures to reach out to licensees with the biannual publication of the DNSR Newsletter, the industrial radiography working group, as well as other various outreach activities.

Based on the information provided in this report, CNSC staff concludes that the use of nuclear substances in Canada is safe and that the health, safety and security of Canadians, as well as the environment are protected. 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.

I would like to mention that there were three minor mistakes in the CMD. The first one is on page 22 where it should read that there was an increase of **--** page 22, sorry **--** there was an increase of 4.7 percentage points instead of 4.2. That is the increase in the compliance level. The second one is

on page 27.

MR. RÉGIMBALD: This is the fourth line where it says "An increase of 4.2 percentage points". On page 22, first paragraph, fourth line, in the middle, 4.7 it should read there.

MS TREMBLAY: And the second one is on page 27. It should read that someone would have to be in proximity of the source for 200 hours. The text reads 30 hours, but it should **--**

MR. RÉGIMBALD: This is the first paragraph under "Missing or found nuclear substances", the first line there, but the paragraph in the last sentence where it says, "for more than 30 consecutive hours" it should read "for more than 200 consecutive hours" and not 30.

MS TREMBLAY: And that did not happen, but it would have had to be 200 to reach the public limit.

And the last one is on page 29 and it's the figure caption for figure 21. It reads right now, "Oil well logging site", it should read "typical industrial radiography setup", some coding issue.

So that's it. This concludes my presentation. Thank you very much for your attention and we are ready for **--** oh.

MR. RÉGIMBALD: André Régimbald here. The opportunity that we have to present the report tonight gives us also a chance to, as you have just witnessed, to correct some information that were noted in other readings and also to receive your feedback and comments in making other changes as needed so that we would be ready to publish in March, 2014. Thank you.

THE PRESIDENT: Okay. Thank you. Let's jump right into the question period, starting with Monsieur Harvey.

MEMBRE HARVEY : Merci, Monsieur le Président.

Je voudrais d'abord féliciter le personnel, et je pense qu'ils ont raison d'être fiers, d'avoir présenté un rapport qui est exhaustif, qui donne une multitude d'informations intéressantes, mais qui, en même temps aussi, peut susciter un certain nombre de questions. Plus on donne d'informations, plus on s'ouvre aux questions.

C'est un commentaire, mais c'est aussi... ça touche... Dès le départ, vous mentionnez dans votre sommaire des résultats, la deuxième diapositive, "that the overall low occupational dose well below the regulatory limits."

Ça donne l'impression quand on parle des limites que les limites sont souvent tellement hautes par rapport à la performance des équipements et de tout ça que... On a travaillé beaucoup sur la performance, mais au niveau de la réglementation qu'on travaille moins sur les limites.

C'est que les limites apparaissent quelque chose que si la Commission utilisait simplement les limites pour surveiller tous ces gens-là, il n'y aurait pas beaucoup de travail à faire parce que ces gens-là arrivent à rencontrer des fois deux ordres de grandeur, trois ordres de grandeur des limites.

Ma question est : Est-ce qu'il y a quelque chose de fait sur les limites ou est-ce que c'est quelque chose d'immuable et qui va demeurer là malgré que la performance s'en éloigne de plus en plus?

M. RÉGIMBALD : André Régimbald ici.

Je vais demander à Mme Caroline Purvis, qui est directrice de la Division de radio protection, d'expliquer les limites réglementaires pour les doses.

Je voudrais souligner aussi que les titulaires de permis sont soumis à des seuils

administratifs et aussi des... en anglais, on dit action levels, des niveaux... des seuils d'intervention qui indiquent possiblement... C'est juste une alerte aux titulaires de permis. Lorsqu'ils atteignent ce seuil, ils doivent faire des enquêtes.

Donc, les seuils d'intervention sont réglés plus bas que les limites réglementaires afin de s'assurer que le titulaire met en place des mesures correctives nécessaires en temps opportun pour éviter que les limites soient excédées.

Mais je demanderais à ma collègue Caroline d'expliquer les limites et répondre à vos questions. Merci.

MME PURVIS : Je m'excuse, mais j'ai manqué quelque chose dans votre question. Si c'est possible...

MEMBER HARVEY: My question is about the limit.

MME PURVIS : Oui.

MEMBER HARVEY: I know how it works generally speaking, but what I'm saying is the performance of the equipment is much lower than the limits anyway and it's some time one or two orders, three orders lower than the limits. So if the staff was only working with limits you won't have much work

to do, you just let it go because they are able to meet the limits quite easily.

So what I'm saying, while the limit stays always at that level, we are also working on the limits and someday in the future that could change.

MS PURVIS: Okay. That's much clearer in English, I'm sorry about that. So, of course you are right, there are dose limits for nuclear energy workers and for members of the public, both of which could be occupational workers.

As we saw and is evidenced in this report, for the majority of workers they are well below the dose limit for NEWs of 50 mSv per year. One has to keep in mind, although it's not presented in this report, that there is also a five-year dose limit of 100 mSv. So, certainly the 50 is not de facto, the only limit that does define the occupational exposure levels that are required for workers, notwithstanding though of course prescribed in our ***Radiation Protection Regulations*** is the requirement to keep doses ALARA.

So there is always work to do. We have certainly talked about this before in other Commission meetings. There is various levels of administrative control, there are action levels that,

again, drive doses to perform well below those limits and to give triggers if things are going out of norm before a limit is reached, but of course the ALARA principle is one which drives our occupational doses well below the limits in most circumstances.

Now, when you talk about the limits themselves, are we planning to change them? Well, certainly we do take our cues from what's happening internationally, we do keep an eye on what's happening in terms of expectations or new science that may move the requirements or the suggestion for lowering limits or perhaps making them larger, although typically that doesn't happen and, as you may or may not know, we currently do have a discussion paper out on proposed amendments to the ***Radiation Protection Regulations***.

There is currently no proposal to change the effective dose limits, but there is a proposal to lower the dose limit for the lens of the eye.

So certainly we keep an eye on what's happening internationally and if we see that the science dictates that those limits have to come down, then we most certainly would do that.

MEMBER HARVEY: Thank you.

Monsieur Régimbald?

M. RÉGIMBALD : Oui, merci.

J'aimerais ajouter, Monsieur Harvey, qu'avec les limites internationales, il y a le principe ALARA, c'est-à-dire de garder les doses au seuil le plus... ou au niveau le plus bas qu'il est raisonnablement possible d'atteindre, et comme on voit les résultats de l'industrie dont nous réglementons, les efforts que les titulaires de permis mettent en place reflètent bien les efforts qu'ils mettent pour réduire les doses au plus faible niveau raisonnable.

MEMBRE HARVEY : J'admets ça complètement, mais ma question était... Mon point de vue était que oui, ils le font, mais est-ce que le regulator, il va le faire, essayer aux limites de s'imposer un principe d'ALARA aux limites aussi?

M. RÉGIMBALD : André Régimbald.

Comme il a été mentionné, nous le faisons à travers les permis et aussi les règlements en exigeant que les titulaires de permis établissent des seuils d'action ou des seuils d'intervention.

MEMBRE HARVEY : Je m'excuse là, je vous interromps. Là, je comprends très bien ça, mais moi, c'est simplement au niveau des limites elles-mêmes, de dire si on considère que c'est quelque chose d'établi qui va demeurer là, ce n'est pas une

grosse pression pour faire mieux, et si nous, on s'endort sur ces limites-là, c'est s'endormir sur quelque chose qui n'est pas lié à la réalité que les gens sont beaucoup plus bas que les limites, puis les limites sont quelque chose, des nuages qui flottent au-dessus. C'est un commentaire. Peut-être que ça...

LE PRÉSIDENT : Monsieur Jammal.

M. JAMMAL : Oui. C'est Ramzi Jammal.

Monsieur Harvey, tu demandes une bonne question. Il y a deux niveaux. Il y a les limites qui sont basées sur des effets et sur des risques médicaux. Ça veut dire que l'effet des rayonnements ou bien de radiation ou bien des effets radiologiques. Mais vous avez raison, au niveau opérationnel, ces limites peuvent être à un niveau plus bas. Alors, on doit le changer.

Alors, la Commission établit deux choses. Je suis tout à fait au courant. Je ne veux pas répéter ce que tu comprends déjà.

Alors, on a les limites qui sont basées sur du risque radiologique au niveau médical et les limites opérationnelles. Alors, c'est pourquoi on a établi les deux. Vous avez raison.

C'est pourquoi on baisse toujours et puis on pousse pour que le seuil d'intervention ou

bien le seuil administratif, qui sont déjà établis par le permis. Et on utilise les conditions de permis quelquefois pour déterminer et établir ce seuil. Vous savez qu'ils sont beaucoup plus bas que les limites basées sur des risques radiologiques.

Vous avez raison. Alors, si l'opération démontre que les limites sont un dixième des limites radiologiques, on l'établit selon le cas.

MEMBRE HARVEY : Parce qu'on le fait souvent, le public apporte souvent cet élément-là de dire que les limites sont beaucoup trop élevées, que ça ne veut rien dire par rapport à... Enfin, il faut, à tout le moins, que ça soit bien expliqué.

M. JAMMAL : Oui, tout à fait. Et puis au niveau radiologique, je ne veux pas laisser le fait que, oui, les doses limites qu'on a maintenant se trouvent dans une zone sécuritaire et sûre pour le public et les travailleurs au niveau radiologique.

THE PRESIDENT: Look, we'll have ample opportunity to discuss this in another sector when we get to the mines.

My concern, we are digressing from -- this is doses to people, not doses to the environment, et cetera which is a whole different other area which we are going to discuss.

But just to remind everybody that as the regulator we are still bound by international practices and in terms of health impact, as you know, we have said that we don't detect much correlation between health impact and 100 millisieverts. So this has been conservative already. The example of Japan even raised the issue about whether 1 millisievert is too conservative.

So we should be very careful about, you know, thinking about it that we as the regulator here in Canada can change the 1 millisievert as the benchmark for assessment. We should apply the ALARA principle and that's where most of the low-level comes from.

But I also found it interesting that practically all of them you've got a good sizeable percentage of unacceptable. So they've still got work to do on the unacceptable kind of category that even if the limit can be easily obtainable there are still a lot of people who are not attaining, you know, in the acceptable side.

So this is just a caution about what do we actually want to think with a limit of 1 millisievert.

Mr. Harvey.

MEMBER HARVEY: Well, I can come back on it.

THE PRESIDENT: Okay.

Dr. McDill.

MEMBER McDILL: Thank you, just a couple of questions.

You mentioned the five year limit. Is there anyone approaching the five year limit or half of it?

MS RICKARD: In the report **--** sorry.

Melanie Rickard, for the record, Acting Director of the Radiation, Health Science Division.

In the report there was one individual who reached 75 millisieverts. Now, there is evidence to suggest that this dose may be non-personal but not with great certainty. So that dose remains on the record. Other than that we haven't seen anyone exceed 100 millisieverts in many years. Very, very uncommon to see that.

Now, the five year block that we're in will end in 2015 so we'll evaluate at the end of 2015 that criteria, that dose limit of 100.

MEMBER McDILL: Thank you. I had seen the 75 but I was wondering if there was other

history that might be available.

What kind of response do you receive from. let's say, the commercial and the industrial sectors when you give an order?

MR. RÉGIMBALD: I will ask Mr. Rabski to respond, please.

MR. RABSKI: Henry Rabski, for the record, Director of Operations, Inspection Division.

Orders are very serious matters, usually involving health and safety of workers or the public. They are taken seriously and normally it's a total interruption of the enterprise so they can't continue to work with nuclear substances until the order is addressed.

So companies tend to act swiftly and take the measures necessary. Where they feel that the order is a bit aggressive or unnecessary they have the opportunity to be heard in front of the designated officer and there are licensees that exercise that right. But at the main **--** at the same time, they must continue to take measures to address the order while that process goes on.

MEMBER McDILL: So it's fair to say that there is usually active response, but there is some grumbling?

MR. RABSKI: Rightfully so. You're correct.

MEMBER McDILL: One last quick question.

Do you push the report **--** this report to other regulators? For example, the French regulator sends us a CD every year of their report. Do you push to other regulators?

MR. RÉGIMBALD: No, only on request, but we publish it on our external website. And when we got to outreach opportunities internationally we do brag about it and offer it on a USB key so that they have it.

But systematically, no, we don't.

MEMBER McDILL: But the CNSC is the only regulator that does this sector. Is that correct?

MR. RÉGIMBALD: Like, we did **--** André Régimbald here **--** when we attended the International Conference on Radioactive Source in Abu Dhabi in October we did amply publicize it at the conference.

MEMBER McDILL: Thank you.

THE PRESIDENT: But the Americans do **--** the medical sector, don't they regulate the medical sector?

MR. RÉGIMBALD: I'll ask Mr. Peter Fundarek to provide information on this.

MR. FUNDAREK: Peter Fundarek, Director of Nuclear Substances and Radiation Devices, Licensing Division.

Yes, the United States, the Nuclear Regulatory Commission does provide regulatory control over the same types of sectors as we do in Canada.

In addition, they are also separate states that look after their own regulatory control of these nuclear substances, the non-agreement states. They provide the same level of control but they don't have as comprehensive a report as the CNSC does in terms of all the four sectors that we cover.

THE PRESIDENT: So you cannot do benchmarking or you cannot compare, really, with them in terms of incident; accident, dosage, things of that nature?

MR. FUNDAREK: Peter Fundarek.

No, we don't have the same kind of information from the United States at this time to do that sort of comparison.

THE PRESIDENT: Okay.

Mr. Tolgyesi.

MEMBER TOLGYESI: Merci, M.

Président.

On the missing or found nuclear substances you were saying that the transport case labelling may lead you to think that it's an expensive construction tool. Should labelling be revised? It's on page 40.

MR. RÉGIMBALD: I'm sorry, Mr. Tolgyesi, I missed the last part of your question.

MEMBER TOLGYESI: How do you make sure that this labelling **--** you know, because if somebody steals it because he thinks it's a quite expensive tool or it's something special, probably he doesn't realize that it's radioactive material.

So how **--** what do you do with labeling requirements to be sure that it's clearly a nuclear or radioactive instrument?

MR. RÉGIMBALD: I'll ask Mr. Peter Fundarek to answer the question.

MR. FUNDAREK: Peter Fundarek.

Just for clarification, is this in regards to the device that was found in an old storage shed?

MEMBER TOLGYESI: Yeah, that's **--** sorry. It's on page 40. It was a device which was missing and found. It's the second paragraph. In

some instances the gauges are stolen because the transport case is mistakenly thought to contain expensive construction tools.

MR. FUNDAREK: Yes, the typical brand of fixed **--** I'm sorry **--** portable gauges that are used in construction sites, the trucks or gauges use a bright yellow container for the transport and as the transport package itself.

Unfortunately, they are very similar in the yellow colour to DeWalt power tools and so people who are after the power tools think that that's what they are acquiring and then they are disappointed when they open them up and find out that that's not the case.

But the cases are locked to the truck and they are locked themselves to provide an additional level of security. So there is **--** there are dual levels of security to make sure that these devices are resistant to being stolen at this time.

MR. FAILLE: Sylvain Faille, for the record.

In terms of the labelling on the containers themselves, the requirements are to put two labels on opposite side of the package with the word "radioactive" and the Class 7 with the trifold, so

there is indication on the package themselves that the content is radioactive. But as Mr. Fundarek had pointed out, people are attracted by the colour yellow first and then they realize that -- afterwards that there is labels on it. And that's when they -- usually they get rid of those containers, after they -- those being stolen.

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

If you go to page 31, sir, of the CMD itself, go back to page 31, you will see one of our inspectors is looking at the gauge itself.

The box on the outside, if you look a little bit towards the bottom of it, it's got a trifold sign. So as Mr. Sylvain Faille was mentioning, so the external part of the box have the trifold indicating that it's TDG-7 and radiation and so on and so forth.

And as Mr. Fundarek said , the target is the box and the truck itself, and they usually end up throwing away the source once they see it's radioactive.

THE PRESIDENT: So the case just last week in Mexico where I assume if they were following proper labelling, the people who stole the truck

wouldn't have opened this because now they've been exposed to cobalt, would the cobalt packaging also have this "danger, danger, danger" sign on it; do we know?

MR. FAILLE: Sylvain Faille, for the record.

I'm not sure if the **--** if it was actually transported in Mexico, but in the general regulations on the international IAEA regulations, that would be a requirement of the labels and also placards on the vehicle to show the presence of radioactive material.

I don't have the particular details of the specific shipment, but the **--** Mexico is one of the IAEA members. They follow **--** they do follow the IAEA regulations, and that would be a part of the regulations that proper label and placarding on those shipments.

THE PRESIDENT: So it would be on the vehicle and on the package?

MR. FAILLE: That is correct.

THE PRESIDENT: Thank you.

MR. JAMMAL: Ramzi Jammal, for the record.

Let me add one thing, is you're

asking that question. Again, it's on the international scene, you will see radiation protection amendment of the regulation and on the international scene, you hit it bang on. Under the IAEA, in addition to the trifold or caution or "do not remove", studies have shown in international countries or in developed countries these things are attracting people of their interest, thinking it's valuable.

So the IAEA has developed a new sign. As we mentioned, it says "danger" and then showing a person running away, so they don't rely -- the individual no longer relies on reading the sign. It's more just like the voltage sign, shock of electricity. So they're trying to enhance the person visually to understand that there is a danger associated with the source.

And in our regulatory amendments, I have to refer to my colleague, Caroline, I believe who will be -- no? Okay.

We're going to adapt it somehow.

MEMBER TOLGYESI: Just a short comment on this, what you were saying about page 31, just to tell you that if I want to steal that box, I have no time to see that small sign on the side because I should act fast.

And turning back to this -- you were talking about Mexico, that it's kind of complex because, on one side, we try to say that it's nuclear, make sure it's not stolen. On the other side, when you travel through cities and highways, when you say it's radioactive, it could -- it could generate a kind of, say, opposition or concerns and refusal.

So I'm not sure how we should act or how regulations should act, but I think it's not so simple.

I have two more -- one more and I will let go. I will come back later maybe.

Could you tell me, over the five-year period, how many lost and stolen substances or devices were registered and how much of them was recovered?

What's the rate of success? Because what you are saying that sometimes you find devices two, three years later.

MS TREMBLAY: Isabelle Tremblay.

We do have the information for 2012 because we expected the question, but not over the five years, so we would have to get back to you if you wanted to know for the five-year period.

THE PRESIDENT: Thank you.

Ms Velshi.

MEMBER VELSHI: Thank you.

I have a number of short questions. Those three cases where you had doses that were deemed not personal doses, but you still assigned them, is that normal practice that when someone exceeds a limit and the investigation concludes that these were not occupational doses, would you still assign the dose that the dosimeter finally comes up with, or is there a judgment call made?

MR. RÉGIMBALD: I'll ask Melanie Rickard to answer, please.

MS RICKARD: Melanie Rickard, for the record.

I would say that it is not. It is more common to change the dose, to remove the dose from the record, perhaps. That's if the evidence is very clear that the dose to the dosimeter was to the dosimeter and not to the person.

So in this **--** these cases that are reported here, the evidence simply was not strong enough to remove those doses from the record, so it is a judgment call, as you say.

And as I mentioned, in many cases we do end up changing the dose. But again, each one is handled on a case-by-case basis. And the key message

here is that when people may exceed a dose limit, there is a process in place through the regulations through Section 16 and Section 1 that must be followed through.

And if the dose, indeed, should be changed, we follow through that -- through a different process.

MEMBER VELSHI: Thank you.

My second question is when we look at some of the sub-sectors, whether it's in the medical side or the commercial sector, we see some very disturbing trends. So if we look at page 67 -- I think it's page 67.

Yes, page 67. And if you look at percentage of inspections meetings or exceeding requirements, and servicing, as you have said in the commentary, has fluctuated, but the reason given up front on the higher number of, you know, not meeting requirements is because there have been more inspections.

But if I look at servicing, actually, the inspections really were up at 73 and now are down at 56, maybe higher than 2011, but not the previous years.

And even with the medical sector --

in fact, that was even more disturbing. I think that's on page 25 where meeting or exceeding requirements is dismal. It's like 60 percent for some of them.

And I guess there are some industries that are probably higher than others that bring the average up, but maybe you can just comment on, you know, what's being done to improve compliance because then I don't see orders being issued to these folks.

So what are the consequences for not meeting standards?

MR. RÉGIMBALD: André Régimbald here.

Before **--** I'll ask Mr. Rabski to provide information in answer to your questions and also to speak about the risk significance of the non-compliance found.

MR. RABSKI: Henry Rabski, for the record.

I'll take the question on basic servicing because that's one that I can deal. And you point out very correctly the difference, the delta, between 90 percent compliant down to 73 percent compliant. And also, you're pointing out the number of inspections, that we're actually doings less and still getting poor results.

The inspections that were undertaken primarily '08 through to -- even into 2011, they were based on -- a lot were based on desktop reviews, that is to say that basic servicing is done across Canada. It's done at sites that use nuclear gauges, predominantly, and also at institutions where they have devices that need servicing and, for the most part, were very difficult to time with an inspection.

So if someone gets a servicing call that their device and gauge in a petroleum plant or a paper mill is not working, basic servicing people are on call. They'll respond. And they may call the regulator to say that they're going to perform a service on the device that involves the source, and they may not.

There wasn't a requirement to notify the regulator when they were doing those inspections so, for the most part, between 2008-2011, we did our best to contact them. And from time to time, we did get to see the actual work being done in the field, but for the most part, they were records inspection, desktop reviews, conversations with the servicing and verifying that they were keeping records, that they did have procedures, they were documenting what they were doing, et cetera.

We've moved away from that and we're focusing more on performance, seeing people working out in the field.

So in 2000 and -- I believe late 2011, we requested of licensees to inform us when they were servicing particularly the device where they were going to deal with the source and have some interaction with the source so that we could at least know when that was occurring and whether we had an inspector in the area or could plan -- pre-plan to go out and see them.

So I have an inspector with me here today that has been successful, and his colleagues, to actually time some of that work out in the field alongside and seeing what's actually happening. And that's the results that we're getting.

We're finding that basic servicing people are not following their procedures. They're getting documented. They're being asked to correct those. There are administrative other changes where they are servicing devices that are not necessarily in their servicing repertoire or on their documentation. They need to correct that.

So, those are types of non-compliances that we're seeing because we're

actually witnessing how those licenses are being followed in the field, and the procedures.

So, that indicates that there is work in that sector that they need to do a better job on supervising, or directing their workers to follow procedures and work safely in the field. And we're sharing that with them.

We are also going to make them accountable and we've sent out letters of warning to say that in the future in some cases they will subject to an AMP for poor administrative response to incidents where they should be taking proper measures to protect workers and the environment. So, we're being a lot more aggressive on that. And, it's indicated in our records that we're finding the field and we're going to follow that up where need be with a board direct enforcement action as deemed necessary.

MEMBER VELSHI: And the reason why you wouldn't have issued orders is because the risk wasn't there, and these are mostly administrative non-compliances?

MR. RABSKI: Henry Rabski for the record.

You are correct. When there's a health and safety risk usually a servicing activity is

to get a device working or actually take a nuclear gauge or source a gauge out of -- out of service, and replace it. So those are usually low risk activities. And based on those type of activities they wouldn't necessitate an order per se.

But there are other regulatory actions that we can take like directives that say, You shall do this. You must improve your process. You must retain your workers to respect those.

And, the other consequence we have now, that we didn't have back then, is AMPS. That if people are not being serious and following their procedures there will be a monetary penalty consequence, as well.

MEMBER VELSHI: Thanks very much. And what about for the medical sector? Can someone comment on that, please?

MR. RÉGIMBALD: I'll ask Peter Fundarek to provide some information please.

MR. FUNDAREK: Peter Fundarek, for the record.

For some of the ones that show a particularly low -- particularly, for example, veterinarian nuclear medicine, we have very few licensees in this area, so if we have one or two areas

of non-compliance then it's going to skew those statistics significantly as a result. So that's a clear demonstration there.

In the other areas, for example radiation therapy, the same situation exists. We have very few licensees in that area.

And we are working extensively on a number of different fronts to address these issues of non-compliance. We've got a number of outreach activities that we conduct throughout the year. We've been to approximately thirty cities across Canada, not just the big cities, but the smaller cities as well, such as we were recently in Chicoutimi and we're planning to go to Bathurst and some other small towns so that we can get the message out from the CNSC to these smaller communities where there are hospitals.

And, we're doing more audits. There's currently an audit underway right now at Regina Qu'Appelle Hospital in Saskatchewan. We've got outreach groups -- sorry, working groups. We've got the well-established radiography working group. We're looking at setting up something similar for portable gauges and potentially for the academic and medical sector, as well.

And, we've got the DNSR Newsletter. And this -- we have generally two editions per year that we send out, but we also, when we identify specific issues that arise, we issue a special edition to address that particular need. So, we've sent out special DSNR Newsletters on portable gauges and industrial radiography, as well.

THE PRESIDENT: Can I just piggyback on you. I'm looking at your slides on your report on page 25. I'm still -- let me focus on one so I can understand what's going on. So, this is a veterinary nuclear medicine where you are showing 33 percent.

So, if it's a one-off, one year, I can accept it, but it's been running on now for the last -- though 2008, etcetera.

So, I understand it's small numbers, but then you know who they are, it's the same people. So, why are you not aggressive here? I'm trying to understand.

MR. FUNDAREK: Peter Fundarek. We will become more aggressive in this area. We went through the report, such as this. We identify areas that we do need to focus more regulatory resources on. So, this is the kind -- this is one of the benefits of

this type of report where we can identify things where we need to do additional work, and so we will be focusing on this area as we would on any area that we identify that requires additional effort.

M. REGIMBALD: Andre Regimbald here, and as Mr. Rabski indicated, the administrative monetary penalty gives us another tool to **--** to enforce our regulatory requirements, and we will not be shy using it.

THE PRESIDENT: I understand. But, I know some of you and I know you're not shy types so I don't understand why, since 2008 you knew there was a problem here, if I understand those numbers, that you did not kind of order them to fix some of those issues.

MR. FUNDAREK: Peter Fundarek. We also apply the risk informed approach, and so we're looking at some small issues typically with the veterinarian nuclear medicine. It's not a health and safety issue for the persons, it's more of an administrative, the way that they were applying the materials to the care and control of animals. So, it's based on the risk informed approach.

We've got other areas that we do

focus a lot more of our resources on, and so that's where the emphasis has been placed in the past few years. And now, as we identify other areas where we can improve, we will apply additional effort.

THE PRESIDENT: Thank you. Ms Velshi?

MEMBER VELSHI: So, I hear what you're saying. I still leave rather concerned because I think we may have had a similar conversation last year when you presented this report, that if we were to fast forward to next year would we see a material improvement?

What would it take to get to 90 percent?

Yes, on a risk basis this may be low, but it shows a cultural issue where ongoing non-compliance is the norm. Across all four of them, they're all under 80 percent. Some may have gone up and have come down. So, I just need more reassurance that the right things are being done and we're seeing improvement and we're confident that a year from now, or two years from now we'll be closer to 100 than where we are now.

MR. RÉGIMBALD: Andre Regimbald. We

are continuing are efforts through outreach sessions with licensees. We will look at -- re-look at our strategy to address this particular sub-sector, keeping in mind this has to be within our risk informed approach and we will look at measures that we could put in place to boost performance in those areas.

MEMBER VELSHI: Thank you. And, I don't want to belabor it, but if you look at the number of inspections in 2012, there are less than there were in 2011. And where you have substandard performance I would have expected greater policing, in the medical sector.

THE PRESIDENT: Go ahead. Go ahead.

MR. RABSKI: Henry Rabski, for the record.

The medical sector is -- is a challenge. We've listed four different categories that it's broken up into.

As my colleagues have said, a lot of the -- a lot of the non-compliances that have been identified by the inspectors are administrative in nature. They are very complex programs involving patient therapy and patient diagnostics, so they are

interacting with that sector. And there are a lot of procedures and so on involved in these type of -- in this type of environment.

We have been working with that, but we have to -- we also have to respect the fact that the health of Canadians is a priority and the ability to deliver medical services to those individuals, we respect.

So, we are working with -- we are working with the medical field and in particular we have taken extra measures with a number of hospitals where we felt the problems were significant. And, as my colleague pointed out, we're doing an audit this week at a hospital in western Canada that had some very significant administrative problems that could affect health care.

So, we take those seriously. We are doing the followup with the individual hospitals. But we must take into account we're prioritizing them on a risk based model, and where there is a health and safety issue we will step in and take those measures.

I think the introduction, also, of the administrative monetary penalties gives us another approach with hospitals that don't take administrative

procedures seriously and are not addressing those. That gives us a new tool that we will consider in those instances where there isn't that change that we're looking for, and they're not taking our directives seriously and instituting those measures. We will consider administrative monetary penalties for those institutions.

THE PRESIDENT: Okay. I would buy everything you've just said, if I understood. Maybe I don't understand the chart. When it's an administrative kind of a non-compliance, I would expect it you below expectations. But you've got a very strong language of unacceptable.

To me, unacceptable is **--** unacceptable.

--- Laughter / Rires

THE PRESIDENT: So, if you look at page 24, you've got 6.3 percent out of 207, unacceptable. Now, I may not understand exactly what you mean by unacceptable, but to me that's 12 if you look at **--** close enough, okay. So, who are they?

And, what is that, if it's unacceptable?

Somebody said that when it's

unacceptable you go in and you fix it. So, what does it mean? Does it mean that you go in and they actually become compliant? So, next year those unacceptable will be acceptable?

MR. RÉGIMBALD: Andre Regimbald, here. As my colleagues highlighted this report was for 2012, and we had problems with a few hospitals back then.

We met with them. Our staff sat down and went over their program and discussed what would be required to correct non-compliance and also improve their programs.

We are seeing the results, you know, right now, and we hope to do the same for non-compliance -- non-compliant licensees in the future.

As Mr. Rabski pointed out, these are mainly or mostly administrative issues that are difficult to get resolved unless we get the attention of the senior staff from the hospital like the Director General of the hospital. And I've issued a couple of letters under paragraph 12(2) of our ***General Regulations*** to make them respond with a plan with corrective actions and dates.

And we are following up very closely to make sure that they implement the plan.

One example was given by Mr. Fundarek, we are conducting an audit right now at Regina Qu'Appelle specifically for that purpose, to measure how well they are implementing the corrective actions. So we are working on it.

My colleagues can add other information also.

MS MURTHY: Kavita Murthy, for the record.

Speaking directly only about radiation therapy inspections, these are site inspections of hospitals and we do a program level audit so we do many more Type I inspections which require very detailed analysis of operational procedures, radiation protection requirements.

And the requirements in the specific safety and control area is a mix of administrative and safe -- directly safety-related requirements, so when you see radiation protection as an SCA, not everything is related directly to safety. It could be something related to record keeping that we would have a deficiency.

In those situations, we don't -- we would not normally issue an order. We would take other measures such as requiring more frequent reporting on the part of the licensee on their action plan looking -- tracking their action plan over a period of time, having more frequent inspections, having direct meetings with upper management to convey the message that this is an unacceptable situation.

And even though the numbers -- the numbers look bad when you look at 57 percent, for instance, a lot of times we are dealing with correcting those types of actions.

THE PRESIDENT: Well, something may be wrong with this, you know, definition of unacceptable. To me, when a regulator says something is unacceptable, it doesn't sound to me like an administrative issue. It sounds like a lot more serious.

And I guess I don't know if it's a good idea. Maybe you should actually identify them in -- by name in your reports.

I don't know if that's a good idea or not, but that may send a very strong message as to what is unacceptable kind of to a regulator.

Anyhow, we're going to move on.

So Ms Velshi, are you finished?

MEMBER VELSHI: I'll come back.

THE PRESIDENT: Okay. Dr. McEwan.

MEMBER McEWAN: If I can start with a very pedantic use of English, in your executive summary in the third paragraph, it's relating to your decision that the three individuals who exceeded the dose limits **--**

THE PRESIDENT: Which paragraph?

MEMBER McEWAN: Third paragraph, last sentence. You say:

> "As a result, no health consequences were observed."

I think the word should be "expected". Observation implies in the past. For something like this, you would surely be looking to the future.

And again, just to comment on the last discussion, in the medical sector you've got 561 licences, of which 50 were in radiation therapy. That's not a small number to have a one in five unacceptable or one in four unacceptable rating. So we're not, in that sector, dealing with small numbers.

And I'm again going to echo the concern of the President and Ms Velshi that to have so many issues in the radiation therapy field, I think, is really concerning.

And if you look at operating issues, what would be an unacceptable component of an operating sector -- operating performance?

MS MURTHY: In the -- Kavita Murthy, for the record.

In the operating performance sector, we would consider not testing the emergency stop buttons as an unacceptable action on the part of the licensee.

On the other hand, if they have a checkout of their machines and they're performing multiple tests but recording it -- not explicitly recording each step of the test as having passed and yet we observe them doing it, we would not consider that unacceptable. We would ask them to correct it.

So that, in broad terms, in my opinion, would be the difference between an unacceptable action, which would be not testing a safety device, and below expectation where they're not explicitly recording each step of the test as they go

along.

MEMBER McEWAN: Why would that be not unacceptable? Because that would provide you with no ability to go back and check what happened in the case of an accident to a patient.

MS MURTHY: And I'm not saying we don't identify that as a deficiency. It is identified as a deficiency. They are asked to correct these just as much as they're asked to correct the not testing of safety interlocks.

But what I'm saying is we don't **--** we don't **--** if we were comparing safety significance, we would consider not testing at all the emergency stop buttons as a higher safety significance than not recording them.

So we do ask them to correct both. There's no question about that.

MEMBER McEWAN: Okay.

THE PRESIDENT: Sorry. Just to follow up, you asked them. Must they do this?

MS MURTHY: Yes.

THE PRESIDENT: In other words, they have to report back **--**

MS MURTHY: Yes.

THE PRESIDENT: -- that they actually have done it.

MS MURTHY: Before -- all corrective actions are tracked through the regulatory information bank and we put deadlines for them to respond to and provide action plans and a completion date and be follow up on all corrective actions, make sure they're addressed.

THE PRESIDENT: Thank you.

Dr. McEwan.

MEMBER McEWAN: Another thing that concerns me through the report is you interchangeably use "nuclear energy workers" and the others as Manitoba defined it, "radiation workers", interchangeably.

And so, for example, on page 20, you say:

> "The doses received by nuclear energy workers working in the radiation therapy sub-sector from 2008 are shown."

The problem is, most radiation therapy workers would not be classified by their institutions as NEWs. They would be classified by the

term that is used in Manitoba or whatever the local term is.

So in my mind, reading through this, I found it very difficult to be able to discriminate those people who were truly in the NEWs category and those who weren't.

MS TREMBLAY: Isabelle Tremblay, for the record.

Actually, the graph on page 20 only concerns nuclear energy workers, and so the only graph in the report that actually talks about other workers -- because we reduced the number of graphs from previous editions.

The only graph that concerns non-nuclear energy workers -- sorry, I'm flipping -- is the one on page 8. Everything else concerns nuclear energy workers.

And the one on page 7 -- no, sorry. Yeah, the one on page 6 includes both nuclear energy workers and other workers.

So the graph on page 6 has both categories together. It's meant to give a snapshot of a sector to sector comparison for the entire population.

But aside from that, they're all nuclear energy workers.

MEMBER McEWAN: So I think one of the flaws to this report, in my mind, is in the medical sector because you have conflated nuclear medicine workers who are likely to have very much larger doses than radiation therapy workers. And so it's really difficult to work out for that sub-sector of a sub-sector who is likely to be at risk of trends that are moving in the wrong direction, particularly as with the nuclear medicine group, there are likely to be some hospitals where there are significantly higher exposures because of PET and therapy applications than there would be in a small hospital offering only nuclear medicine.

The second group would be within the radiation therapy workers, those involved in brachytherapy, particularly if their practice is entirely brachytherapy, would have a very different dose distribution, if you'll allow that phrase, than people working only on linear accelerators.

So I don't think that the way that you've broken out the data for individual groupings is particularly helpful just to say the medical sector.

There are differences in the medical sector that are important.

MS MURTHY: Kavita Murthy, for the record.

That's a very good observation, and you're right. We don't **--** we haven't presented that data. We do have it because all licensees are required to submit an annual compliance report, and we do ask them to separate nuclear energy workers from non-nuclear energy workers, so we do have that data. We can present it in the next reports.

But your observation is valid.

MEMBER McEWAN: But I also think that nuclear energy workers and non-nuclear energy workers, it's important to discriminate between nuclear medicine and **--**

MS MURTHY: Yes.

MEMBER McEWAN: **--** the non-nuclear medicine sector to **--**

MS MURTHY: I agree with you.

MEMBER McEWAN: **--** understand.

MS MURTHY: We do have that information. We could get it.

MEMBER McEWAN: So just on that and

on finger doses which you discuss in the context of cyclotron operations, who is responsible for looking after dose trends of, say, interventional radiologists or radiation oncologists involved in brachytherapy? Because those are groups with very high historical levels and I don't see a tracking mechanism for that.

MS MURTHY: Kavita Murthy, for the record.

Brachytherapy physicians would be tracked in this report under **--** in the same **--** in the medical sector, but interventional radiology those would be tracked at the provincial **--** yeah.

THE PRESIDENT: I'm still very confused. I'm still on page 20 and I'm trying to understand the number "sampled nuclear energy workers".

We are talking about the radiation therapy, right? So is it 2,524 that's the number of radiation therapy?

I'm looking at the yellow **--** the little **--** this is a sample?

MR. RÉGIMBALD: Andre Rēgimbald here.

Yes, sir, this 2,524 are from the annual compliance report that we have analyzed. Those

are the number of workers, nuclear energy workers in that sector from the ACRs submitted by the licensees.

THE PRESIDENT: So there are actually 2,500?

MR. RÉGIMBALD: M'hmm.

THE PRESIDENT: It seems to me like a big number. I thought it was a big number.

MR. JAMMAL: Ramzi Jammal, for the record.

Just to make it a bit more complex here, this is a sample. That's not the full number of workers. As a matter of fact the number of workers far exceeds 2,500.

As a result of last year's discussion **--**

THE PRESIDENT: No, I get it. I get it. I'm just trying to understand the numbers. The number is 10,000, if I understand the total sample size. All sectors combined is 10,300, if I understood correctly, out of which there are 2,500 workers, nuclear workers in radiation therapy.

Did I get it right?

MR. RÉGIMBALD: Yes, that's correct.

THE PRESIDENT: Okay, thank you. I

thought it was a big number.

MEMBER McEWAN: So how many radiation workers in radiation therapy in total if Manitoba don't classify them as NEWs?

UNIDENTIFIED SPEAKER: We don't have that number, sir.

MR. JAMMAL: Well, we can look it up.

I'm going to do two things. It's Ramzi Jammal, for the record.

I want to look up two things tonight. One of them is the NDR work classification because I know for a fact there is a category called "Manual Brachytherapy".

So there are two things we're talking about here: The sampling that staff has done out of the annual report and then there is the categorization according to the NDR. So I'm going to look at both because exactly **--** your point is very well taken.

So how many are NEWs in radiation therapy? We can determine this from the NDR even though the NDR is five years behind. But at least it gives me an idea how many thousands they exist. As you know, the variation is not that great from year to year. It's a more stable industry.

Caroline, do you have anything else to add?

MS PURVIS: Caroline Purvis, for the record.

I think we just have to be cautious because the information in the NDR is all information for workers that are monitored using licensed dosimetry.

In the case that we heard earlier, those workers at Dr. Fife's facility are using a licensed dosimeter to ascertain dose for a non-NEW worker. Therefore, as an obligation of that licensed dosimetry service they must file the information with the NDR.

So looking at the number of workers in the NDR does not equate necessarily to the number of NEWs in the industry. But notwithstanding, you're right. There certainly is some licensees that are classifying workers as NEWs that probably don't need to be classified as such. But for whatever reason they believe that that's appropriate for their program.

Certainly -- and Dr. Binder asked the question earlier about what are the obligations for

making that difference? And certainly there is an administrative obligation, more so if you identify the worker as an NEW but they also receive more training and they are given more information about the risk associated with radiation. So there is positive benefits as well.

And as we discussed earlier in response to Mr. Harvey's question, we don't just regulate to the limits. There is lots of other requirements in terms of administrative controls and the application of the ALARA principle.

But it is confusing and there's no question about it. That's why we have specialists looking at radiation protection programs to ensure that the measures put in place are appropriate and necessary in each case.

THE PRESIDENT: The only surprising thing for me is that we allow the licensees to determine. So it'll mean that every hospital or every situation will be different depending on what the licensee does. So I'm surprised you don't have guidance or a stance about what we want to see done.

Again, I'm not looking for another regulation. I'm just looking **--** there is total

confusion if you can't compare one institution with another institution.

MEMBER McEWAN: I have more questions but I'll come back.

I just have one more pedantic comment, if I may, page 16, bottom paragraph. I wasn't aware that P-32 was used to treat joint pain. It should come out.

MR. RÉGIMBALD: Okay. We will address that. Thank you.

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

Dr. McEwan, I would like -- I've been corrected by my colleagues here that the NDR does not classify NEWs. But we can always do the math, try to estimate.

With respect to your question, Mr. Binder, pertaining to the guidance, we do have guidance for licensees with respect to how they ascertain the dose and to classify the workers.

But there is one thing, though. It's some of the labour movement and unions in the hospital request of their employer to issue the dosimeter or even classify workers for whatever myth, or whatever

labour discussions issue. That becomes a labour relation issue.

Sometimes we turn blue in the face telling them a dosimeter is not a radiation protection instrument but there is always an insistence of having a dosimeter classifying the worker. So we have the guidance in place.

I will pass it on to Melanie if she wants to add anything more.

But we do have the guidance but there is the other aspect, is the unionized environment with respect to the doses to the workers.

THE PRESIDENT: Okay, thank you.

So we're going around again. Whoever is **--** Mr. Harvey?

MEMBER HARVEY: Just a few questions.

The first one is related to reporting the events. Can we say that is good news or bad news this increase of events? It's in all the sectors and every year it's just a straight line going up.

So is it because they are more aware of their responsibilities or is it because, well, there's more and more problems?

MR. RÉGIMBALD: Andre Régimbald here.

I think there is -- we have sensitized the industry through our outreach activities to report the events diligently and in accordance with requirements. So that's one of the reasons why we are seeing it.

And also there is increased industrial -- increased activities in the activity that they use the radiation devices for, which has the potential for having more events.

And also, with respect to compliance inspections, Henry Rabski can talk about when we do field inspections. Sometimes we observe licensees who do not apply or comply with the requirements and they are more liable to have reported events.

I'll ask my colleagues to supplement any information, please.

MS MURTHY: Kavita Murthy, for the record.

A lot of our outreach efforts in recent years has gone into making licensees more aware of their responsibilities with respect to reporting. We have clarified the requirements. We have given them examples of situations where they should be reporting.

So I think it is a part of the outreach effort that we have done that we are getting more reports these days.

And I believe a lot of this work was done by Peter Fundarek and his group, so I'll let him take it up.

MR. FUNDAREK: Peter Fundarek.

Yes, we have conducted extensive outreach, in particular to the idea of encouraging and educating licensees with respect to their obligations for reporting events. So this is a good news scenario here where we're getting more events reported because licensees are understanding and recognizing their obligations and adhering to them.

So that is encouraging to us because we're being able then to use that information to further apply regulatory effort as necessary when we identify areas that need particular emphasis.

MEMBER HARVEY: So you think it's much more linked to that than the increase of the problems?

MR. FUNDAREK: Peter Fundarek.

Yes, I do. It's more that the licensees understand their obligations to report now.

THE PRESIDENT: Can I jump on this? How do you know they are reporting what they need to report?

MR. FUNDAREK: Peter Fundarek.

It's the nature of the reports that are coming in. When we do our outreach and we're talking with licensees directly we have a discussion with them and the feedback we're getting is that they had better understand now, "Oh, okay, that I should have reported. So now I will be doing that".

And we see some of these reports coming in through annual compliance reports. We did in the past see a number of these, but we're seeing fewer of those that haven't been previously reported to us now. So licensees clearly understand that they do have to report these events when they occur. So that leads us to the understanding that they have a better appreciation of what their reporting requirements are.

THE PRESIDENT: Well, let me ask you it slightly differently. What are the consequences of not reporting?

MR. FUNDAREK: Peter Fundarek. If licensees don't report we have a variety of tools in

our toolbox that we can use and we now have the addition of AMPS that we can apply. And I think my colleague Mr. Rabski can further enhance on that.

But, as you have seen the number of orders that have gone out, and we do investigate issues where we've identified that events have occurred that have not been reported to us, we do carry out an investigation to see what were the circumstances and follow up.

And, I will ask my colleague Mr. Rabski if he wants to add anything further.

MR. RABSKI: Henry Rabski, for the record.

Over the years I think as part of our **--** the CNSC program to talk to licensees, the performance based inspections that we do in the field where we actually talk to workers that are using portable gauges, radiography cameras, the people that are using the gauges are very aware of what's going on in the industry.

And, I can tell you that we receive a number of calls, emails, notification on the help line **--** on our info desk, on people you can call whistle-blowers, people asking questions about what's

going on in the industry, people talking about other licensees in the area that are not working safely. So, they're all aware of that.

And, that also puts the emphasis on licensees that they are not only being watched by the CNSC, they're watched by their own workers. They are watched by their competitors, and they have to play by the rules, and that is to report and report honestly and get those incidents on the record, otherwise they will be reported to us in other ways, and we'll take those very seriously if they are, indeed, events that should have been reported and we will take the necessary actions.

MEMBER HARVEY: Last question, on page 10, the middle of the first paragraph **--** well, at the end. It's about the commercial sectors saw a decrease with 84.9 of inspected licensees found to be compliant in 2012 compared to 92.7 in 2011. This is because the CNSC was able to conduct more field inspections for the servicing sub-sector.

Well, it looks strange to me that because of that it changed like that. So, it's like to say that the **--** that 92.7 was not very good the year before. Well, I don't see that it could be the

only reason.

MR. RABSKI: Henry Rabski for the record.

We believe that because we've actually gone and measured out in the field, we have the non-compliances. When we're doing a desktop, we're just looking at records. We're evaluating the compliance from a different perspective. We're looking at what they have as documentation and whether it's complete or not.

But, when you go in the field, you're actually measuring what they're doing. So, are they actually following a procedure? That's a completely different type of evaluation. It's performance based, rather than records based.

So, those type of inspections, I think complement your first question about a dose to workers and what does that mean. When you actually measure in the field what's actually happening, are workers working safely? And that's the assessment there that we got.

We got that they weren't following all the procedures and that there was need for improvement and that was measured by the inspectors

actually witnessing what someone was doing when they were servicing.

The same thing when it comes to the portable gauge. If you stand off in the field and you watch a construction crew work and do the work, you're seeing are the following the procedures, and are they taking adequate provisions? Are they actually putting up the barriers every time they take a measurement? Are they using their field instruments? Are they leaving the gauge unattended?

Our statistics are showing that when we go out there this is -- these are things that we're observing. And by going out there, we also make licensees aware that at any time an inspector could be looking over your shoulder.

So, the overall awareness now in particularly in the portable gauge industry is that yes, indeed, the inspectors will not just be coming to the head office. They could come on any work site and be watching at a distance and then tapping you on the shoulder and saying, Why aren't you doing this, following your procedures?

So, it's a very direct method and we think it's showing where improvement needs to be made,

and we're going to work on that sector and get workers working safely.

MEMBER HARVEY: So I understand that. I think you're working towards the appropriate figure and that was not the case in the past. That 92% might not have been the appropriate figure for the field **--** in the field. Okay, but **--**

MR. RABSKI: You're correct. It wasn't a reflection of what was happening in the field. It was a reflection of how they were keeping their records.

THE PRESIDENT: Dr. McDill?

MEMBER McDILL: Thank you. I guess this question is for staff, and Mr. Jammal in particular.

If a nuclear power plant came in with an unacceptable, wouldn't the reaction be somewhat different?

MR. JAMMAL: Ramzi Jammal for the record.

The simple answer is yes, based on the risk associated with the activity. And at times the industry is different. And a power reactor, for them to get to an unacceptable **--** the structure is

different.

But let me go back to the point, yes, the reporting will be different and the regulatory action will be different. And if -- at that level they will be before the Commission immediately. So, we will do the graduated enforcement and then we will, if we need to, will bring them before the Commission. But very rarely they get into that position because they have a full structure of health physics, radiation protection, and it's a bigger support for the worker, and regulatory compliance is very serious with them. That's one aspect.

The other aspect is where we are in this industry what is unacceptable from an administrative perspective or repeated events -- this is the nature of the industry.

I hear the discussions about changing trends. I fully agree we will focus on where we need to put the efforts, and our resources -- I mean, I'm going to give the analogy, we cannot have -- we don't have a policeman at every corner. At the same time, we trend, we evaluate, and as Mr. Rabski mentioned, for example we moved from an administrative review of a program to actual field verification. And the

variations in the report is going to occur from year to year. But, you're right. I'll go back to your point, is, for a power reactor or processing facility an unacceptable is completely a different reaction.

MEMBER McDILL: The reason I'm raising it is for example the table that's presented on 70 -- page 76, the regulatory process for the -- the five compliance ratings just for operational purposes, and the four compliance ratings for reporting purposes. But the fully satisfactory, below expectations, and unacceptable are letters we use in the NPP reporting, and so a member of the public making this read back and forth may be perplexed.

MR. JAMMAL: Ramzi Jammal for the record.

You're correct. I mean, there's nothing else I can say.

And the A, B, C, D, and E. I'll take responsibility for the FS, SA and UA. We switched them over, trying to correlate in order to provide consistency, because that Directorate functioned for the longest period of time as, A, B, C, D, and E, and we have to do a regular review. The fact that -- I mean, we have the inspectors here, in E, was at times a trigger to

issue an order. That was the trigger, depending on the severity of the E that was found as being unacceptable.

We're going to look at this and I'll take your point.

I'll take your point. You know, the public might correlate them, acceptable in this industry to an unacceptable in a reactor.

MEMBER McDILL: Thank you. One more quick one. If we were to back out the high energy particle accelerators on page 39, that would be TRIUMF and Light Source, is it possible to say where they would be? They are obviously in a very different category than the rest of the industrial sector.

MS MURTHY: Could you clarify the question? I just want to make sure I understand.

MEMBER McDILL: Sure. On pages 88 and 86 you indicate that the results of inspections reviews for TRIUMF and Light Source are in Figure 30. Detailed in Figure 39 of this report. Figure 39. Sorry, I was on the wrong page.

Okay, so I apologize, I was on page 39, not Figure 39, so that's my error and I'll attribute it to the hour or the day, or at least the time when I read it the first time. So, I went back to page 39, not Figure 39, yeah.

So, they're doing pretty well. Thank you.

Thank you, Mr. Chairman.

LE PRÉSIDENT : M. Tolgyesi.

MEMBRE TOLGYESI : Merci, Monsieur le Président.

You know, I was surprised on page 10 you were talking about responding to Mr. Harvey about compliance was used from **--** was from 92.7% to 84.9, and you were saying that his was able **--** because CNSC was able to conduct more field inspections as opposed to verifying compliance over the phone or via email. It's like, you know, the police calls me, Did you speed on the highway? I said, No.

So, I'm concerned about how you do that, and was it this specific to commercial sector or it was straight all over the sectors and if it was is it still on, or it's not?

MR. RABSKI: Thank you for that question. The phone or via e-mail refers to what we

call as a desktop evaluation. So what we do is, they may be basic servicing companies that work out of the United States or they are located in strategic areas in Ontario or across Canada, and what the inspectors were doing where they didn't go to the actual office and review the records, they could do that type of evaluation as well as doing a phone interview where they take the questions that they would normally ask, if they were at the location, they would go and review those questions over the phone.

So you are correct, it's a different type of inspection that was used during that period of time and they may say, okay, item 1, show me your records and they would ask that the licensee fax records over to verify not just in saying, yes I did it, they would look for some documented proof and that could be provided electronically in those cases.

So some of the inspections for difficult access to commercial service providers, that was a technique that was used. That is something that I have discouraged. We have tried to evolve the program to more performance-based and we're working on that.

The other thing you have to keep in mind, too, is that not all the service work that was

being done was directed towards high risk or medium risk sources, they were done at the lower end, so on XRF machines and so on, where the risk is very low and the activity that the service providers provide is infrequent and very non-risky.

Again, that's a different approach. We can't go to every location, we have to focus on high risk and that's what we were doing. So to address the commercial basic service providers, we use that technique.

Now, we are trying to complement that now with performance-based out in the field and we are also going to places where they are actually -- when they call, they are actually going to manipulate the source, they are actually going to take a source out of a gauge or device and not just simply replace the whole unit in its totality, they are going to actually do something that involves potential dose to the worker, to the environment, to those individuals doing that. So we're really trying to focus that to see, in fact, if they are working safely.

So we recognize that and we have made the change and we think that -- now we have the cooperation also of the service providers to let us know. We focus on what type of activities we want and

I just specified that and we are getting a good response from them. We get calls regularly, they are directed to the regional coordinator and he does his **--** he or she does her best to try to get inspectors out to those service providers that we see very infrequently or do infrequent work in Canada on our gauges, whether they are low or medium risk.

So that's our approach and we are trying to do a more effective job in getting that assessment done and not relying on records or just interviews over the phone or in a basic service provider's office where they don't actually do any work; we are trying to do it more field based.

MEMBER TOLGYESI: Okay. My second is on page 48 you are saying, in the first paragraph:

> "To do this, CNSC management has separated its role as licensee and its role as a regulator."
>
> (As read)

Now, it is well seen, well pursued, it is observed, you know, somebody from the public could see that. How do we present this?

MR. RÉGIMBALD: André Régimbald here. As indicated in the report, the CNSC conducts certain activities that are regulated under the *Nuclear Safety*

and Control Act and regulations, so we are self-regulated and we have taken it upon ourselves to apply the same regulatory rigour and requirements as we do for industry and licensees.

So in "par souci de transparence", for the sake of transparency and openness, we have separated the two roles. One branch at the CNSC acts as a licensee and holds the licence, it's actually the Technical Support Branch and the licence is issued to the CNSC Laboratory, and the regulatory function is assumed by the Directorate of Nuclear Substance Regulation, which is in the Regulatory Operations Branch, and this is how we chose to separate and licences are issued in the same way as with other similar use types, inspections are conducted with the same frequency and with the same rigour and also, if there are issues that cannot be resolved, then it's my duty as the regulator to raise it up the CNSC management to ensure that it is resolved if it cannot be resolved at lower levels.

So this is the system that we have chosen to regulate ourselves.

THE PRESIDENT: Okay. Ms Velshi...?

MEMBER VELSHI: One remaining question. As this report evolves **--** and by the way,

this was an excellent report, I forgot to mention that at the outset **--** is, when you look at reported events on slide 12, do you categorize the events by potential risk or potential harm like we do for MPP events? Because I think that would be helpful to appreciate, is the risk being better managed?

MR. RÉGIMBALD: André Régimbald here. That's a very good point, because the reportable events as shown in this graph does not distinguish or does not give information about the risk significance of the event. However, there is information available on our website in our report of lost and stolen sources which gives an indication of, for example, if it's a low risk or medium risk source involved. But it's a good point we can take into consideration for the coming years. Thank you.

MEMBER VELSHI: And one last one. On page 63 of the report, Figure 49, there is a slight error there. Your red line on the limit is placed at the wrong place. Do you see that? It should be at 500 mSv.

MR. RÉGIMBALD: André Régimbald here. This is the extremity dose. I'm sorry.

MEMBER VELSHI: It should be at 500.

MR. RÉGIMBALD: Noted; thank you.

THE PRESIDENT: Mr. McEwan...?

MEMBER McEWAN: Thank you, Mr. President. So again, just very briefly commenting on the risk assessment that Dr. McDill brought up, and I will remind you that particularly in radiation therapy there is an individual patient at the end of that unacceptable and if there is an adverse event to a patient I would argue that that is arguably going to affect less people than an unacceptable at a nuclear power plant, but for that patient it could be catastrophic.

So I really do think that the thing that struck me in this report were the number of unacceptables in radiation therapy because there you have a patient at the end of each of those unacceptable exceptions.

And I think **--** I'm not sure how you build this in, but I have very great concerns also that the increasing financial pressures on departments offering radiation therapy are leading to shortcuts in some of these very important areas, and so I was disappointed in the number of direct inspections that were done.

And I think, you know, if you think one in four, one in five unacceptable in that sector

for only inspecting one in six, one in seven of the licensees is probably not a particularly good risk/benefit ratio.

The second question: if I wanted to find the performance of central and hospital radiopharmacies as a subsector, where would I find it in this report? They deal with very large amounts of radiation and they deal with multiple handling events.

MR. FUNDAREK: Peter Fundarek. That information is contained within the Diagnostic and Therapeutic Nuclear Medicine Group, but it's not broken out separately in this report.

MEMBER McEWAN: I would urge you to consider breaking that group out. As I say, they handle very large amounts of radiation. I would suspect they are responsible for a large number of the spills also, just given the amount of handling that occurs in those issues and I think if we are going to understand how that sector is performing, we need to understand how each element of that sector is performing.

THE PRESIDENT: Is the reporting that they do to you easily breakable that way?

MR. JAMMAL: It's Ramzi Jammal, for the record. Point well taken. We will amend our

annual report so it reflects the person category, the number of individuals to say radiopharmacy person and then we will try to segregate it this way, but it is going to require an amendment to the annual report to put that category of workers in that special category so that you are able to extract it separately.

MR. RÉGIMBALD: I would like to ask Paul Denhartog, an Inspector with our Mississauga office, to provide some information, please.

MR. DENHARTOG: Paul Denhartog, for the record. My observation actually is that the large commercial radiopharmacies operate better than the nuclear medicine departments, because they also hold an establishment licence from Health Canada, they are rigorously inspected, they have annual inspections, we see them as high risk.

And, in fact, if you look at the **--** for example, a good parameter would be the extremity exposure from let's say Lantheus Cardinal, they have the best numbers in Canada.

MEMBER McEWAN: Then I think it's even more important that you break it out and I would break it out **--** I'm not sure how you would do it, but I think between the large commercial central radiopharmacies and the larger hospital

radiopharmacies to get some idea, because I suspect that you may see differences between those two groupings.

MR. DENHARTOG: Paul Denhartog. I agree with you completely. It's not a large group, so I think it could be broken out fairly easily, yes.

MEMBER McEWAN: And just a final comment. On page 63, Figure 49, looking at extremity workers, extremity doses, the 200 to 500 category seems to me to be a very broad spread given that as you are moving towards 500 you are coming to the limits and it may be helpful to break that down into two or three smaller groupings to understand what the trend is within that very broad area.

Thank you, Mr. President.

THE PRESIDENT: Thank you. Anybody else. Anything else?

I have maybe two. On page 30 can somebody talk to me about NRCan's role in certifying exposure device operators? The first time I heard about this. I want to know who in NRCan does that, who actually developed the curriculum, what did they know about nuclear operation, et cetera, et cetera, and who set up the exams.

And I understand that you are in the

process of putting in a new guide. Why? What is going on here? Anybody?

MR. RÉGIMBALD: I will ask Mr. Rabski to provide information, please.

MR. RABSKI: Henry Rabski, for the record. The CNSC certifies exposure device operators due to the high risk nature of the operations that they are involved with. That has been going on for a number of years.

We use NRCan as a provider of the exam itself. The exam is a CNSC exam administered by Natural Resources Canada to evaluate candidates that want to become certified exposure device operators.

We have been using NRCan for a number of years to administer those exams, as well as practical tests. All the criteria for becoming certified is controlled by the CNSC. When the practical exams, the training and the final examination pass of the test are presented to the CNSC, then the personal certification department will make the decision whether or not the certification of an individual will take place.

The basis of that certification goes back to a CNSC ***Regulatory Guide G-229*** that goes back to 1998 **--**

MR. RÉGIMBALD: Eighty-eight.

MR. RABSKI: Eighty-eight. Sorry, for the record, 1988. And the work that we have done over the last couple of years have identified that this is an outdated document. So the CNSC, with the cooperation of the industry and their encouragement, the radiography industry, we have embarked with the Canadian Safety Association on developing a new standard to replace G-229.

We are in the process of getting that standard finalized and hopefully in 2014 present that to the Commission for their approval to replace Guide 229. This will bring the requirements to the current standards that are necessary for certification operators to work safely with radiography equipment in Canada and we are very excited about this process and the support that we have received from the industry as well as Canadian Standards Association in developing this new guide.

THE CHAIRMAN: So NRCan is purely administrator of CNSC exam?

MR. RABSKI: At this time, yes. The NRCan also certifies other type of specialists in the field of non-destructive testing on their own right that they issue certification and this is an

arrangement that the CNSC has had purely for the administration of the exam, as well as the practical test.

We are in discussions with NRCan as we move forward whether or not this will continue and we are hopeful that NRCan can continue to support us in this important certification requirement.

MR. RÉGIMBALD: André Régimbald. I may add, you asked about improvements in our certification system. So the new CEDO certification program will involve -- currently involves, for example, issuing certificates for CEDOs for five years, so it's a fixed period of time as opposed to the indefinite period that we have right now. So this is an improvement. We will have greater control over the training and competencies demonstrated by the operators.

Also there are requirements for vocational training, on-the-job training and Henry can add, other types of on-the-job shadowing and justification from licensees when the five-year period ends so as the individual can continue to have the certification in place.

So there will be better control put over the operators.

THE PRESIDENT: Does anybody fail such exams?

MR. RABSKI: Henry Rabski, for the record. Yes, it is **--** the current process right now for examination certification involves an examination of not true and false, but multiple-choice examination, thank you, as well as a written question. And the operators have found that quite challenging, the written examination question that they are challenged with.

The certification **--** our moving forward with this particular certification has addressed challenges to the industry. We want to make sure that the examination covers the essential safety requirements and we have gone through a rigorous process with a (indiscernible) Scheme Committee overseen by the Canadian Safety Association to evaluate those requirements.

We have also included in our proposal for the new standard to have a practical examination administered as well on the renewal period and at the initial application to ensure that the applicant has the necessary tools to be successful and to work safely.

The examination will assess a proper

passing score that will give us the competency that we require to have a good and safe industry.

THE PRESIDENT: Okay. Thank you. Two quickies now. On page 41 there is the statement "there are thousands of shipments of radiation devices every year in the industrial sector". A very quick question, do we count them? Do we have a number? Is there a number?

MR. RABSKI: Henry Rabski, for the record. No, there is no exact numbers, those ones that are the ones that are used on jobsites so they're moving back and forth from their location to the jobsite and there is a lot of activities.

But in terms of actual numbers, we don't have true numbers for any shipments in Canada.

THE PRESIDENT: Do we have an estimate, I mean, because we are using many times millions of devices and substances going, but we never actually have actual numbers.

MR. RABSKI: That is correct. The estimates are based on research that was conducted many years ago and we just noted it had increased since then, but we don't have true numbers for **--** we do have information from some licensees that are major shippers, but we don't have the full information.

THE PRESIDENT: Okay. My last question. You know, we have been debating whether **--** do you think this report should have been sent to the industry for comment before you publish them? I mean, in other words, should we have had for this particular meeting invited the industry to comment on that? Would that be useful or not? You know we do it many times, we invite, for example, people to comment in writing.

Would it be useful to you to do this before we publish it?

MR. RÉGIMBALD: André Régimbald here. With the population that we have of licensees, over 2,000 licensees, it would be difficult to do meaningful consultation and to publish the report in time.

The report covers the calendar year 2012, we're at the end of 2013, so **--**

THE PRESIDENT: No, what I meant, though, is in this meeting, for this meeting where this is published, if you like, you would invite anybody who has any comment on the report?

MR. RÉGIMBALD: André Régimbald. We did provide advice or information, notification to all of our licensees that the report was being presented

tonight and invited them to attend in person.

THE PRESIDENT: But not to submit a written **--**

MR. RÉGIMBALD: But not submit written comments. The report is published on our website. We have received comments on past reports on improvements to make or any comments about any of the information and, as the years go by, we correct information or we provide better information that would suit their needs better.

MR. JAMMAL: Ramzi Jammal for the record here, sir. There are two things. By all means, as we progress with this report we will determine with the Secretary with respect to allow written intervention.

As Mr. Régimbald, I think we are mature enough right now to post the comments of the Commission and then the announcement for next year or the year after we can request **--** invite the public intervention, in the format that the Commission feels to be adequate, just like any other report.

THE PRESIDENT: Okay. Thank you. Anything else?

I guess this concludes this evening session and, believe it or not, we will be back here

tomorrow at 8:30. Thank you all for attending and have a nice evening.

--- Whereupon the hearing adjourned at 10:23 p.m., to resume on Tuesday, December 10, 2013 at 8:30 a.m. / L'audience est ajournée à 10 h 23 pour reprendre le mardi 10 décembre 2013 à 8 h 30