

**Canadian Nuclear  
Safety Commission**

**Commission canadienne de  
sûreté nucléaire**

**Public hearing**

**Audience publique**

**October 4<sup>th</sup>, 2011**

**Le 4 octobre 2011**

Chalk River & Area Lions Club Hall  
11 Kellett Street  
Chalk River, Ontario

Charlk River & Area Lions Club Hall  
11, rue Kellett  
Chalk River (Ontario)

**Commission Members present**

**Commissaires présents**

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

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

**Secretary:**

**Secrétaire:**

Mr. Marc Leblanc

M. Marc Leblanc

**General Counsel :**

**Conseillère générale:**

Ms. Lisa Thiele

Mme Lisa Thiele

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Chalk River, Ontario

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--- Upon commencing at 9:03 a.m. /

L'audience débute à 09h03

**Opening Remarks**

**M. LEBLANC:** Bonjour mesdames et messieurs, bienvenue à cette audience publique de la Commission canadienne de sûreté nucléaire.

The Canadian Nuclear Safety Commission is about to start a public hearing -- in fact, continue a public hearing on the Application by AECL to renew it's Nuclear Research and Test Establishment Operating Licence for the Chalk River Laboratories.

During today's business, we have simultaneous translation.

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

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

L'audience est enregistrée et transcrite textuellement. Les transcriptions se font dans l'une ou l'autre des langues officielles compte tenu de la langue

1 utilisée par le participant à l'audience publique.

2 J'espère que la console de son va régler, I  
3 hope the sound will be improved because I can hear the  
4 feedback.

5 I'd also like to note that this proceeding  
6 is being video webcasted live and that the proceeding is  
7 also archived on our website for a three-month period  
8 after the close of the hearing.

9 Les transcriptions seront disponibles sur  
10 le site web de la Commission dès la semaine prochaine and  
11 to make the transcripts as meaningful as possible, we  
12 would ask everyone to identify themselves before speaking.

13 As a courtesy to others in the room, please  
14 silence your cell phones and other electronic devices.

15 I'd just like to note that we will break  
16 around 10:45 this morning and we will stop for lunch  
17 exactly or very close to 12:30.

18 Monsieur Binder, Président et premier  
19 dirigeant de la CCSN va présider l'audience publique  
20 d'aujourd'hui.

21 Mr. President.

22 **THE CHAIRMAN:** Thank you Marc and good  
23 morning and welcome to the public hearing of the Canadian  
24 Nuclear Safety Commission.

25 Mon nom est Michael Binder, je suis le

1       président de la Commission canadienne de sûreté nucléaire  
2       et je souhaite la bienvenue aux gens ici présents et à  
3       ceux qui se joignent à nous par webdiffusion.

4                 First of all, on behalf of the Commission,  
5       let me tell you how delighted we are, a) to be out of  
6       Ottawa; b) to be in Chalk River. And the warm welcome we  
7       get from everybody, particularly the staff of the Lions'  
8       Club Hall that has been setting us up here, so thank you  
9       for all of that.

10                I'd like to begin by introducing the  
11       Members of the Commission that are here with us today. On  
12       my right is Dr. Moyra McDill and Mr. Dan Tolgyesi and on  
13       my left Dr. Ronald Barriault and Monsieur André Harvey.  
14       You've heard from Marc Leblanc, the secretary of the  
15       Commission and we have Ms. Lisa Thiele, General Counsel to  
16       the Commission with us here today.

17  
18       **11-H13 / 11-H13.A / 11-H13.B**

19       **Adoption of Agenda**

20  
21                **THE CHAIRMAN:** With this information, I'd  
22       like to call for the adoption of the agenda. Do we have  
23       concurrence?

24                For the record, the agenda is adopted.

25                So let's proceed with the Atomic Energy of

1 Canada Limited Application and Marc, you have some  
2 comments to make?

3 **M. LEBLANC:** A few opening remarks.

4 As we said earlier this is Day two of the  
5 public hearing, the first day of the public hearing, or  
6 Day one on this Application was held on June 8<sup>th</sup>, in  
7 Ottawa.

8 The Notice of Public Hearing 2011-H-02 was  
9 published on April 5<sup>th</sup> and revisions were published on  
10 July 29<sup>th</sup> and September 8<sup>th</sup>, to change the date of hearing  
11 Day two.

12 Presentations were made on Day one by the  
13 Applicant, AECL, under Commission Member Documents or CMDs  
14 11-H7.1, 7.1A, 7.1D and by Commission staff under CMDs H7  
15 and H7.B.

16 The public was invited to participate  
17 either by oral presentation or written submission.  
18 September 6<sup>th</sup> was the deadline set for filing by  
19 intervenors.

20 The Commission received 16 requests for  
21 intervention; one request was received shortly after the  
22 deadline and was accepted on the agenda. Three requests  
23 were received several days after the deadline and were not  
24 accepted.

25 The Commission strongly urges all parties

1 to file their submissions within the deadlines set in the  
2 Public Notice of Hearings, in compliance with the CNSC  
3 Rules of Procedure.

4 Participants funding was available to  
5 intervenors to prepare for and participate in hearing Day  
6 two. The Commission received four requests for funding.  
7 The Funding Review Committee, which is independent of the  
8 Commission, reviewed the applications. Funding was  
9 provided to three intervenors or groups, as per a decision  
10 issued on July 21<sup>st</sup>, 2011.

11 September 27<sup>th</sup> was the deadline for filing  
12 of supplementary information. I note that supplementary  
13 information has been filed by CNSC staff, AECL, Emergency  
14 Management Ontario and intervenors.

15 So I'd like to mention that municipal  
16 representatives are here in attendance. Today, we have  
17 the Mayor from the Town of Laurentian Hills as well as the  
18 Mayor from the Town of Deep River, and we have  
19 representatives from Natural Resources Canada that are  
20 available to answer questions after the presentations.

21 We will first hear the presentations today  
22 by AECL, CNSC staff and then Emergency Management Ontario.  
23 After that, we will go through a first round of questions  
24 from the Commission Members and then we're going to hear  
25 from intervenors.

1                   At the end of the day, there will another  
2 round of questioning from Commission Members.

3                   The break for lunch, as I mentioned  
4 earlier, will be from 12:30 until 1:30 and there will be a  
5 short break in mid-morning.

6                   Mr. President.

7

8                   **Atomic Energy Canada**

9                   **Limited:**

10                  **Application from Atomic Energy of**

11                  **Canada Limited to renew its**

12                  **Nuclear Research and Test**

13                  **Establishment Operating Licence**

14                  **For the Chalk River Laboratories**

15

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

17                                 So let's begin and I'd like to start the  
18 hearing by calling on the presentation from AECL, as  
19 outlined in Commission Member Documents 11-H7.1D, .1E, .1F  
20 and .1G

21                                 And I understand that Dr. Walker, you'll  
22 make the presentation? Please proceed.

23

24                   **11-H7.1D / 11-H7.1E /11-H7.1F / 11-H7.1G**

25                   **Oral presentation by**

1       **Atomic Energy of**  
2       **Canada Limited**

3  
4                   **DR. WALKER:** Thank you very much, Mr.  
5       President, Members of the Commission. Good morning,  
6       ladies and gentlemen.

7                   For the record, my name is Robert Walker; I  
8       am the Senior Vice-President of Atomic Energy of Canada  
9       Limited's Nuclear Laboratories and its Senior Executive  
10      accountable for Chalk River.

11                  With me here today is Randy Lesco on my  
12      immediate right, AECL Vice-President of Operations and  
13      Chief Nuclear Officer; and to Mr. Lesco's right, Andrew  
14      White the Nuclear Laboratories' Chief Regulatory Officer.

15                  We're also joined by various AECL subject  
16      matter experts and members of our leadership team.

17                  Nous sommes ici aujourd'hui devant vous  
18      pour continuer le dialogue que nous avons commencé en juin  
19      dans le but de renouveler le permis pour le site des  
20      laboratoires de Chalk River de AECL de 2011 à 2016.

21                  With the support of my colleagues, we will  
22      update the Commission and respond to Commission Member  
23      questions on subjects of importance for the nuclear  
24      laboratories during the next licensing period.

25                  Au cours des prochaines minutes je ferai le

1 point sur la cession des opérations commerciales de AECL,  
2 après quoi je me tournerai vers Andy Lesco qui vous  
3 donnera les détails supplémentaires sur d'autres points  
4 d'intérêts.

5                   Shortly following our Day one licence  
6 hearing with the Commission on June 8<sup>th</sup>, the government of  
7 Canada announced the sale of AECL's Candu reactor  
8 division. AECL has been preparing for this eventuality.  
9 This announcement and the subsequent actions have provided  
10 clarity on the nuclear laboratories' transition to a lone  
11 nuclear science and technology organization. AECL is and  
12 will be a Crown Corporation principally comprising the  
13 nuclear laboratories. Its ownership and policy mandate  
14 rest with the Government of Canada.

15                   The nuclear laboratories is reliant in  
16 funding from the Government of Canada, including future  
17 investments to fully satisfy the regulator's licence  
18 conditions. This funding support enables continued  
19 expenditures in the critical infrastructure of the nuclear  
20 laboratories in general, and the Chalk River Laboratories  
21 in particular.

22                   AECL reports to Parliament through the  
23 Minister of Natural Resources and, as indicated on the  
24 slide, continues to be governed by a board of directors  
25 and a chief executive officer. We are keeping our

1 management manual up to date to reflect any changes.

2 Through this transition, AECL is well  
3 positioned to continue to meet all of its obligations for  
4 safety and compliance under applicable acts and  
5 regulations. The necessary organizational groups required  
6 for the safe and secure operation of the Chalk River  
7 Laboratories remain intact.

8 In preparation to become a stand-alone  
9 corporation, corporate finance, information technology,  
10 human resources and legal functions have all been  
11 relocated to Chalk River. These important changes have  
12 also resulted in the appointment of three new vice  
13 presidents in finance, human resources and legal.

14 This transfer has also necessitated the  
15 staffing of some 86 new positions for the nuclear  
16 laboratories. To date, 70 of these positions have been  
17 filled with professionals who are currently working in  
18 their new jobs.

19 Preparations are now underway to enter into  
20 the second phase of AECL restructuring to focus on the  
21 nuclear laboratories.

22 This effort is being led by the Government  
23 of Canada through Natural Resources Canada. During this  
24 process, the nuclear laboratories will continue to focus  
25 on its strategic outcome, specifically ensuring that

1       Canadians and the world receive energy, health,  
2       environmental and economic benefits from nuclear science  
3       and technology with confidence that nuclear safety and  
4       security are assured.

5                   My message to the Commission today is that  
6       AECL has operated the Chalk River Laboratories safely  
7       through the licence period. AECL is appropriately  
8       positioned to enter into the next five-year licensing  
9       period for the Chalk River Laboratories to meet and exceed  
10      the conditions laid out in the new licence and its licence  
11      conditions handbook.

12                   While before the Commission today, AECL  
13      will focus its presentation on the following areas of  
14      importance.

15                   Severe event management; the safe and  
16      continued operation of the NRU Reactor; and environmental  
17      monitoring of Chalk River Laboratories.

18                   I will now ask Randy Lesco to provide  
19      additional details on these subjects.

20                   Randy?

21                   **MR. LESCO:** Good morning, Mr. President and  
22      Members of the Commission. For the record, my name is  
23      Randy Lesco and I'm AECL's vice president of operations  
24      and chief nuclear officer.

25                   To start, I'd like to state that the

1 nuclear laboratories has an absolute commitment to safety.  
2 We have operated safely during the current licence period.  
3 We have made improvements to facilities that will continue  
4 to enhance safety and we are well positioned, with  
5 detailed plans, to meet our obligations through the  
6 proposed licence period. This licence is vital to our  
7 success as Canada's nuclear science and technology  
8 laboratory.

9 Our presentation today will focus on severe  
10 event management, the NRU Reactor and environmental  
11 monitoring. As part of severe event management, we will  
12 focus on our emergency response.

13 During the Day One hearing, there were  
14 several questions from the Commission about our emergency  
15 response practices. I will detail our systems over the  
16 next few slides for further clarity.

17 There are three levels of response to an  
18 emergency situation: facility, site and off-site. At each  
19 level, responsibilities and actions to an event are  
20 clearly defined.

21 Our first bullet refers to actions taken at  
22 the facility level. Within each facility, there's an  
23 officer in charge. This individual has the authority to  
24 place the facility into a safe and secure state. To do  
25 so, the officer in charge uses established facility

1 procedures.

2 The second bullet speaks to our site-wide  
3 emergency management procedures and communication  
4 strategies. Our emergency operations centre has qualified  
5 senior staff who are on call 24 hours a day, 7 days a  
6 week. They organize emergency operations to support  
7 individual facilities. They also provide coordination  
8 across the site between facilities and with external  
9 emergency response network as required.

10 Addressing our third point, in the event of  
11 an emergency, AECL's responsible for on-site response and  
12 ensuring the safety of staff. If the event has off-site  
13 consequences, Emergency Management Ontario, EMO,  
14 coordinates response with the municipalities and provides  
15 support to the site.

16 The Emergency Management Ontario assures  
17 the safety of the public and protection of environment.  
18 The Federal Government provides support to the Province  
19 and connects with international organizations as required.

20 In conclusion, there are clear lines of  
21 authority at all levels of emergency response. The  
22 emergency response network has the ability to act in a  
23 timely and coordinated fashion.

24 In addition to this command and control  
25 structure, we participate in an all-hazards approach to

1 emergency response. Actions to mitigate the effects of an  
2 event are the same regardless of the cause. This  
3 optimizes our planning, response and support resources.

4 We regularly practice our emergency  
5 response procedures. The facilities, emergency operations  
6 centre and each level of government have routine drills in  
7 which we participate. These include more than 40 annual  
8 building drills such as fire, radiation and chemical  
9 spills; annual transportation exercises; annual site stay-  
10 in drills; site evacuation drills which take place every  
11 five years, the last being held in 2009; table-top  
12 exercises, eight of which have been completed in 2011.

13 And, finally, participation in exercises  
14 led by provincial or federal authorities. The last  
15 provincial exercise at Chalk River took place in 2007; the  
16 last federal exercise occurred in 2011.

17 Our response capabilities were put to the  
18 test this year on Sunday, July 17<sup>th</sup>. A severe storm and  
19 high winds caused a power failure lasting approximately 20  
20 hours. Power lines were broken from both electrical feeds  
21 into the Chalk River site.

22 Site response and back-up systems worked as  
23 intended. There were no emergencies as a result of this  
24 power outage. The Chalk River site was maintained in a  
25 safe and secure state.

1                   In brief, our emergency response is  
2 grounded on a foundation of planning, training, alignment  
3 and integration. Our Chalk River Laboratories is a member  
4 of a widespread emergency network. This network plans and  
5 practices various scenarios to ensure the effectiveness in  
6 an actual emergency.

7                   The events at Fukushima have increased  
8 awareness of nuclear emergency capabilities. As a result,  
9 the nuclear industry is looking at the lessons learned  
10 from this event.

11                   AECL's initial review of these lessons have  
12 confirmed that: (1) we have procedures and equipment  
13 available for emergency response; (2) our back-up power  
14 supplies will operate; (3) our facilities are capable of  
15 mitigating the impact of internal and external flood  
16 events; and (4) our defence in-depth safety assumptions  
17 for external events remain valid for all our nuclear  
18 facilities.

19                   The overall conclusion is that our site is  
20 well prepared in the event of an emergency. More  
21 specifically, there are no safety issues requiring  
22 immediate corrective actions.

23                   However, along with this initial  
24 evaluation, we have recognized a number of improvement  
25 opportunities. Improvements include focusing on the

1 following: (1) preventing an event such as a loss of power  
2 from turning into an accident; and (2) mitigating the  
3 progression of an accident, should it occur.

4 With respect to the first point, we are  
5 procuring equipment such as mobile diesel generators in  
6 the event of total loss of site power, including the loss  
7 of back-up diesel generators. In addition, we'll be  
8 considering a separate staging area for the necessary  
9 support supplies.

10 To the second point, we will be doing  
11 additional analysis to develop our severe accident  
12 management guidelines. This will determine necessary  
13 steps to manage the progression of any such accident.

14 Improvement action plans are being  
15 developed and will be presented to CNSC staff in November  
16 of this year.

17 I will now move on to the NRU Reactor.

18 Since the beginning of this licence period,  
19 continuous improvements have been made to the NRU Reactor  
20 in the areas of people, process and plant.

21 Examples include improving the leadership  
22 team with the creation of new positions in NRU; improving  
23 work management processes such as the creation of an  
24 outage control centre; and completing major equipment  
25 overhauls such as refurbishing new process water system.

1                   Increased funding support from the  
2                   Government of Canada has resulted in programs like the  
3                   isotope supply reliability program. This program has made  
4                   recent enhancements possible.

5                   In 2008, AECL and the CNSC signed a  
6                   protocol in preparation for re-licensing. In accordance  
7                   with this protocol, we have completed an Integrated Safety  
8                   Review, ISR, of the NRU Reactor. This review is the most  
9                   comprehensive assessment ever conducted for a research  
10                  reactor.

11                  The ISR began with the evaluation of 17  
12                  different safety factors. It covered plant design,  
13                  condition and operation, and all aspects of the operating  
14                  organization and related programs. Over 16,000 individual  
15                  appraisals were completed against 83 separate monitoring  
16                  codes and standards.

17                  A systematic approach was applied to  
18                  consolidate all the areas for improvement into five main  
19                  groups.

20                  They are (1) Current Plant Condition and  
21                  Plant Life Management; (2) Management System and  
22                  Organizational Effectiveness; (3) Safe Operating Envelope  
23                  and Safety Analysis; (4) Training in Nuclear Programs;  
24                  and, finally, (5) Engineering and Design Changes with  
25                  Respect to Modern Codes and Standards.

1           An Integrated Implementation Plan, IIP for  
2 short, was developed that identified improvement  
3 activities for each of the groups. These activities have  
4 been prioritized to provide the greatest benefits to  
5 safety and reliability.

6           As well, there's a structured change  
7 management process. This process allows emerging issues  
8 to be prioritized and added to the plan.

9           The IIP begins November 1<sup>st</sup> of this year,  
10 however, this does not indicate the start of the NRU  
11 improvement program. We have proactively started physical  
12 and program improvement activities.

13           AECL is on target to complete 156 of 169  
14 activities by the end of October. This represents 90  
15 percent of the targeted activities.

16           Allow me to talk to you about NRU fitness  
17 for service.

18           An extended outage was executed in late  
19 spring of this year for two purposes; (1) to inspect the  
20 vessel repairs to support its ongoing fitness for service  
21 and, (2) to complete physical improvements and inspections  
22 identified during ISR process.

23           The repair inspections were connecting  
24 using first-of-a-kind tooling. This tooling was designed  
25 to reach weld repairs with the reactor vessel fuelled.

1           Vessel inspections completed during the May  
2 extended outage and regular maintenance outages in July  
3 and August have confirmed that there is no change in  
4 vessel wall thickness and no change in weld repairs. The  
5 vessel is unchanged since its re-start last year.

6           Some additional lower weld inspections will  
7 be completed during upcoming maintenance outages. These  
8 inspections are required to obtain baseline information  
9 for future inspections.

10           To date, all available information confirms  
11 that the NRU vessel continues to be fit for service.

12           And, now, onto our last topic of today's  
13 discussion, environmental monitoring.

14           During the Day One hearings, there were  
15 some questions about our environmental monitoring  
16 practices. I would like to provide you with some  
17 additional information today.

18           This chart details our radiological  
19 airborne and liquid emissions from Chalk River operations  
20 from 2006 to 2010. The year-to-date information has been  
21 included for your reference in the far-right bar.

22           The purple bars in the graph are airborne  
23 emissions, primarily argon and xenon. The grey bars,  
24 which are barely visible, show the waterborne emissions  
25 which consist primarily of tritium.

1                   Please note that the lower emissions in  
2                   2009 and 2010 were due to the extended shutdown of the NRU  
3                   Reactor. The extended shutdown resulted in a notable  
4                   decrease in argon-41 emissions.

5                   In summary, the Chalk River Laboratories  
6                   emissions are a small fraction of the regulatory limit.

7                   This summer, Laval University conducted an  
8                   environmental sampling study in the Chalk River area.  
9                   This is the fourth conducted. Earlier studies occurred in  
10                  1999, 2000 and 2005. The survey included many types of  
11                  samples that we routinely collect and analyze as part of  
12                  our own environmental monitoring program.

13                  In the area surrounding Chalk River, Laval  
14                  sampled local vegetables, milk, water, air and river  
15                  sediment.

16                  The Laval results are consistent with the  
17                  information contained in AECL's environmental monitoring  
18                  reports.

19                  For example, Laval University collected  
20                  Ottawa River samples for tritium analysis from two  
21                  upstream locations; one at the Chalk River site and four  
22                  at downstream locations. AECL collects water samples in  
23                  similar areas.

24                  All results were comparable and were  
25                  approximately 1 1/1000<sup>th</sup> of the drinking water limit for

1 tritium.

2 As we seek renewal of our licence, I'd like  
3 to conclude my remarks by re-stating what was said in our  
4 Day One licence hearing.

5 We've operated Chalk River site safely  
6 during the current licence period. We have operated with  
7 due regard for the environment, security and the best  
8 interests of Canadians. With a renewed licence, we will  
9 continue to do so.

10 We will continue to be Canada's nuclear  
11 science and technology laboratory.

12 Thank you very much for your attention  
13 today. The AECL management team and I would be pleased to  
14 respond to any questions you may have.

15 **THE CHAIRMAN:** Thank you. Thank you very  
16 much.

17 I'd like to move on to a presentation from  
18 CNSC staff as outlined in CMD 11-H7.C and H7.D.

19 I understand that, Mr. Jammal, you're going  
20 to make the presentation. Please proceed.

21

22 **11-H7.C / 11-H7.D**

23 **Oral Presentation by**

24 **CNSC staff**

25

1                   **MR. JAMMAL:** Merci, monsieur le président.  
2                   Bonjour, monsieur le président, membres de la Commission.  
3                   Je suis Ramzi Jammal, avec moi aujourd'hui, monsieur Peter  
4                   Elder, Directeur général de la Direction de la  
5                   Réglementation du cycle des installations nucléaires et  
6                   monsieur Christian Carrier de la Division de  
7                   l'autorisation et de la conformité des laboratoires de  
8                   Chalk River.

9                   In addition, we have here with us the CNSC  
10                  team comprising of our specialists and our licensing and  
11                  compliance staff and who worked very, very hard with  
12                  respect to the re-licensing of Chalk River Laboratories.

13                  Other members of our team are in Ottawa and  
14                  are available to answer your questions via teleconference.

15                  CNSC's staff presentation addresses the  
16                  application by Atomic Energy Canada Limited, AECL, to  
17                  renew its operating licence for the Chalk River  
18                  Laboratories, which I will refer to as CRL.

19                  As was mentioned by Mr. Leblanc, the first  
20                  day of the two-day public hearing was held in Ottawa on  
21                  June 8<sup>th</sup>, 2011.

22                  I would like to start with a brief summary  
23                  of events that took place during the licensing period.

24                  After an extended shutdown of NRU in 2007,  
25                  an independent, third-party review was conducted. This

1 report is known as the Talisman Report which highlighted  
2 several areas of improvement, two of which are  
3 communication and clarity of the licensing basis. The  
4 CNSC acted on the recommendations by carrying out multiple  
5 improvement initiatives, one of which is the licensing  
6 reform.

7 The licensing reform includes the  
8 development of the licence conditions handbooks and it is  
9 incorporated in the licence of Chalk River Laboratories  
10 that is before you.

11 As part of improved communications, AECL  
12 and CNSC signed three administrative protocols that  
13 defined the responsibility, milestones and regulatory  
14 expectations for the key licensing activities, which are  
15 the NRU relicensing activity, the NRU restart and,  
16 recently, the Nuclear Legacy Liability Program.

17 In 2009, NRU garnered significant attention  
18 following the detection of a small heavy water leak from  
19 the vessel. NRU was repaired and returned to service  
20 safely.

21 In July 2010, the Commission granted AECL  
22 the approval to restart NRU and, as a condition of the  
23 approval, NRU was to undergo a planned extended shutdown  
24 to inspect the vessel.

25 The first planned extended shutdown was in

1 progress at the time of public hearing Day 1 in June of  
2 2011. As reported to you during the Day 1 hearing, the  
3 shutdown presented challenges to AECL with respect to the  
4 available tools and the length of time required to  
5 complete the inspections. Mr. Carrier will address this  
6 issue in more details in his segment of the presentation.

7           Shortly after the event in Japan, the CNSC  
8 issued a request under subsection 12.2 of the General  
9 Nuclear Safety Control Regulations requiring licensees to  
10 review initial lessons learned from the event and to re-  
11 examine the safety cases of nuclear facilities.

12           AECL responded to the CNSC directive and  
13 completed its short-term actions. As the lessons learned  
14 -- or as the lessons from the event in Fukushima evolve,  
15 AECL and the CNSC are committed to further actions to  
16 address the longer-term findings from the event.

17           Finally, this year the CNSC announced that  
18 it was providing its first participant funding for the  
19 renewal of CRL operating licence. The participant funding  
20 program provides members of the public, aboriginal groups  
21 and other stakeholders with financial assistance so that  
22 they can add value to the regulatory decision-making and  
23 regular decision-making process.

24           Three applicants to the program are  
25 providing us today with their submissions; the Métis

1 Nations of Ontario, Mr. Eric Campbell and the Concerned  
2 Citizens of Renfrew County. It doesn't look very good.

3 Mr. President, Members of the Commission,  
4 relicensing of the Chalk River Laboratories was completed.  
5 Thanks to the dedication and the commitment of CNSC staff,  
6 the CNSC has executed its regulatory oversight in support  
7 of the licence renewal without any compromise to safety.

8 I now pass the presentation on to Mr.  
9 Elder.

10 **MR. ELDER:** Thank you. Good morning.

11 I'll just briefly go over the rest of the  
12 presentation for today.

13 We'll go over the CNSC staff assessment of  
14 AECL's performance during the current licence period --  
15 that's from 2006 to 2011 -- that was presented at the Day  
16 1 hearing. We will then provide information on the CNSC  
17 staff review of the NRU integrated safety review that was  
18 completed just prior to Day 1.

19 **THE CHAIRMAN:** Sorry to interrupt.

20 **MR. ELDER:** Yes.

21 **THE CHAIRMAN:** Are we having technical  
22 problems because we can hardly read the material and I  
23 understand that the webcast is not -- nobody's connected  
24 to the webcast?

25 Okay. We'll continue, but try to confirm

1           who is there -- can barely read the fonts here on those  
2           Powerpoint.

3                           Okay, well, do your magic. See what you  
4           can do.

5                           Please continue.

6                           **MR. ELDER:** Sorry. Then we'll go, as Mr.  
7           Jammal noted, to discuss more on the lessons learned from  
8           the Fukushima accident in Japan and the NRU vessel  
9           inspections that were under way during Day 1.

10                           We will also provided updated data on  
11           radiation protection environmental releases that was  
12           requested by the Commission at Day 1.

13                           And then we go on further to discuss the  
14           oversight of the Nuclear Legacy Liability Program and  
15           AECL's public information approach.

16                           Finally, we will conclude our presentation  
17           with our conclusions and recommendations to the  
18           Commission.

19                           AECL's Chalk River Laboratories licence  
20           expires on October 31st, 2011. AECL's application for the  
21           renewal of this licence was received in September, 2010.  
22           CNSC staff have reviewed the application and are satisfied  
23           the application is complete.

24                           An environmental assessment associated with  
25           that application was done for the continued operation of

1 the NRU reactor. This was concluded in March of 2011, and  
2 the Commission determined there were no significant  
3 adverse environmental impacts associated with continued  
4 operation of the NRU.

5 On Day 1 of the hearing, CNSC staff  
6 presented the results of the comprehensive review of  
7 AECL's operation. Again, CNSC staff concluded that AECL  
8 had operated the facility safely during the licence  
9 period.

10 AECL continues to maintain comprehensive  
11 and mature core programs that cover the whole site. Over  
12 the last five years, there has been measurable  
13 improvements in physical design, environmental protection,  
14 fire protection and nuclear material management.

15 Where performance does not yet meet CNSC's  
16 expectations, AECL was required to develop and put in  
17 place a detailed plan to achieve satisfactory performance  
18 in a timely manner. Overall, AECL has made improvements  
19 to its operation during this current licence period that  
20 will continue to enhance safety into the future.

21 The next two slides summarize CNSC staff's  
22 assessment of AECL's performance in the standard safety  
23 and control areas. It is important to stress that these  
24 ratings are for the entire site since the programs cover  
25 the entire site, and they're also applicable to NRU.

1                   As you can see from the table, CNSC staff -  
2                   - AECL has achieved satisfactory ratings in all but two  
3                   areas; management system and fitness for service. I will  
4                   discuss how these areas are being addressed on the  
5                   following slides, noting that both have an improving  
6                   trend.

7                   Improving trends have also been assigned to  
8                   six safety and control areas with a satisfactory rating.  
9                   These are based on measurable improvements in these areas.  
10                  For example, under the area of physical design, AECL has  
11                  developed an engineering change control process based on  
12                  industry best practice.

13                  There are a couple of areas that I would  
14                  like to note where we've seen improvements over the last  
15                  five years. These are areas where actually CNSC staff  
16                  required improvements.

17                  AECL in the last licence and current  
18                  licence was required to improve its Environmental  
19                  Protection Program by characterizing contaminated land and  
20                  groundwater plumes, producing effluent flow diagrams and  
21                  installing a real-time Argon-41 monitor in the NRU stack.

22                  AECL's completion of these and other  
23                  actions led to the rating for environmental protection  
24                  going from below expectations in 2006 to satisfactory in  
25                  2011.

1 Under waste management, AECL was required  
2 to put in place a comprehensive waste-management program  
3 for the entire site. This resulted in the construction of  
4 new, modern waste storage and management facilities such  
5 as the waste analysis facility and several shielded  
6 modular above-ground storage units. As well, requirements  
7 for waste minimization, segregation and characterization  
8 have been implemented.

9 AECL is currently developing a detailed,  
10 integrated waste plan to address the future radioactive  
11 waste streams, including those resulting from the Nuclear  
12 Legacies Liabilities Program.

13 With respect to safeguards, it's important  
14 to note that CNSC staff has worked closely with AECL since  
15 2001 to provide the IAEA with information on historical  
16 material at Chalk River. These efforts were key to having  
17 the IAEA draw the overall positive safeguards conclusion  
18 for Canada, one of the few countries in the world that has  
19 been able to do so.

20 While information pertaining to the  
21 security area is protected, AECL's performance in this  
22 area has been satisfactory.

23 I would now like to discuss more the two  
24 areas that we've rated as "Below Expectations".

25 In both of these areas CNSC had

1 longstanding concerns and we radically changed our  
2 approach to them in 2007 based on Talisman Report  
3 recommendations. We have strived to make sure  
4 requirements are clear and understood to all and  
5 commitments are tracked closely.

6 "Management System" was assigned "Below  
7 Expectations" based on longstanding issues with quality  
8 assurance and identified weaknesses in safety culture.  
9 These were highlighted during the NRU vessel leak  
10 investigation in 2009.

11 CNSC staff's approach to this area has been  
12 two-pronged; require AECL to move to a formal management  
13 system and require AECL to actively address its safety  
14 culture issues.

15 AECL will be continuing to transition to a  
16 management system that is in line with modern standards in  
17 the next licence period. To do this, AECL is building on  
18 existing processes and procedures that will remain in  
19 place to ensure that there is adequate safety level.

20 Note that full transition will take some  
21 time. A gradual transition is appropriate in complex  
22 organizations with a safety focus. AECL's transition  
23 approach is well documented and is typical for the  
24 complete implementation of an integrated management  
25 approach in a complex nuclear organization.

1                   On safety culture, AECL has already taken  
2 positive steps based on the lessons learned from the  
3 vessel leak and other safety culture assessments.

4                   The main vehicle for these initiatives is  
5 called the Voyageur program, and AECL has -- CNSC required  
6 AECL develop to address the organizational factors that  
7 contributed to the 2009 vessel leak.

8                   CNSC staff has closely monitored AECL's  
9 progress and concludes that implementation to date is  
10 acceptable. AECL's forecasted completion of this program  
11 is for March 2014. Overall, CNSC staff is satisfied with  
12 the progress in this area.

13                   Fitness for service is the other area where  
14 CNSC staff has observed weaknesses in both AECL's programs  
15 and practices. In particular, aging of infrastructure and  
16 weaknesses in maintenance programs have resulted in a  
17 number of events and include the NRU vessel leak, leaks  
18 from the NRU rod bays, and minor leaks of radioactive  
19 liquids from radioactive liquid waste storage facilities.

20                   AECL has implemented corrective actions for  
21 these specific leaks, including the NRU vessel repair,  
22 remediation of the rod bays and reduction of the tritium  
23 source that is the moderator by about 90 percent by  
24 changing out the moderator and replacing it with new  
25 de-tritiated water. Finally, we -- there have been

1 improved control and monitoring of radioactive liquid  
2 waste storage facilities.

3 While AECL has taken appropriate steps on  
4 the individual leaks, better programs are required to  
5 prevent future leaks.

6 One of the ways that -- to address this,  
7 CNSC staff require AECL to take an holistic view of its  
8 programs focused on NRU, and this led to the requirement  
9 to do the integrated safety review. And this is to  
10 identify both physical and programic improvements to  
11 ensure the facility continues to operate in the future.

12 Note that since the programs are site-wide,  
13 any program improvements will improve safety regard -- or  
14 across the site.

15 This is the first kind of review for a  
16 research reactor. It is all inclusive and systematic  
17 evaluation against modern standards. While we will  
18 provide more on our review later in the presentation, it  
19 did identify all the work required to implement a modern,  
20 aging management program and AECL has already made  
21 significant progress on this work.

22 I'll now turn the presentation over to Mr.  
23 Carrier.

24 **MR. CARRIER:** For the record, my name is  
25 Christian Carrier. I am the Director of the Chalk River

1 Laboratories Licensing and Compliance Division.

2 On public hearing Day One, the Commission  
3 requested additional information on various topics. This  
4 additional information was provided in CMD 11-H7.8. I  
5 will provide a summary of this information in the  
6 following slides.

7 Among the requests, the Commission asked  
8 for the 2010 radiological and environmental data for the  
9 Chalk River Laboratories. The following figure was  
10 updated to include this information.

11 As you can see, during the licence period  
12 no worker at the CRL received an effective dose exceeding  
13 the regulatory dose limit. The average effective dose to  
14 workers for 2010 remained low at approximately 1 percent  
15 of the regulatory dose limit.

16 The maximum annual individual whole-body  
17 dose for nuclear energy workers for the year 2010 was  
18 15.75 Millisieverts. This is below the annual action  
19 level of 20 Millisieverts.

20 The inclusion of the 2010 data does not  
21 change CNSC staff's conclusion that AECL has met the  
22 program in place for radiation protection and that  
23 radiation doses to workers are well controlled.

24 With respect to environmental protection,  
25 airborne and liquid radiological emissions from the CRL

1 site remain small. The estimated dose to the most exposed  
2 member of the public is approximately 1/10<sup>th</sup> of the annual  
3 regulatory limit of 1 Millisievert.

4 One area of interest from the Commission  
5 during hearing Day One related to the legacy groundwater  
6 plumes within the Chalk River Laboratories property. As  
7 their name suggests, these primarily result from past  
8 operations and activities.

9 AECL implemented measures to both define  
10 the plumes and to monitor the flow of contaminants they  
11 contain. This is now in place and the plumes are well  
12 defined and monitored.

13 We note that since 1997 contaminant  
14 concentrations in the groundwater have remained at similar  
15 levels or have decreased. The management of groundwater  
16 plumes is addressed as part of the Nuclear Legacy  
17 Liabilities Program.

18 In summary, the results of AECL  
19 environmental protection program confirmed that the CRL  
20 radiological releases do not significantly impact the  
21 public and the environment.

22 As committed on Day One, the following  
23 figure provides updated information on the tritium  
24 concentration in the Ottawa River including the year 2010.

25 Levels of tritium in the Ottawa River near

1       Petawawa remain around 7 becquerels per litre. This is  
2       well below the Canadian guidelines for drinking water  
3       quality. Note that the horizontal line on this graph  
4       corresponds to 1 percent of those guidelines.

5               On hearing Day One, CNSC staff committed to  
6       provide details on the integrated safety review process  
7       and its results for the NRU reactor. This information was  
8       provided to the Commission in Supplementary CMD 11-H7.C.

9               As stated by Mr. Elder, the integrated  
10       safety review is a comprehensive and systematic evaluation  
11       of the NRU design, condition, and operation against modern  
12       standards. CNSC staff agrees with the methodology used by  
13       AECL for the conduct of the integrated safety review.  
14       CNSC staff also agrees with the output, which includes the  
15       global assessment report and the Integrated Implementation  
16       Plan.

17               AECL's areas of improvements identified  
18       during the review were grouped thematically in five global  
19       issue groups as shown on the slide.

20               The first includes planned physical  
21       improvements to the NRU reactor, understanding of plant  
22       condition, and the improved reliability programs.

23               The second includes, among other things,  
24       the continued implementation of the Voyageur II program.

25               The third addresses updates to the NRU

1 safety case.

2 The fourth includes the development of  
3 severe accident management approach for the NRU reactor.

4 And, finally, the fifth includes a seismic  
5 reassessment of the NRU reactor.

6 Safety enhancements identified were ranked,  
7 prioritized, and incorporated in AECL's Integrated  
8 Implementation Plan with completion dates.

9 CNSC staff has accepted the Integrated  
10 Implementation Plan in May 2011. For each year of the  
11 proposed licence, the licence conditions handbook includes  
12 a requirement for AECL to develop and submit to the CNSC  
13 detailed execution plans for the year.

14 The Integrated Implementation Plan provides  
15 concrete and measurable actions to improve the condition  
16 and the operation of the NRU Reactor.

17 CNSC staff recommends that reporting on the  
18 progress of the Integrated Implementation Plan be part of  
19 the proposed licence. To do so, two licence conditions  
20 are proposed.

21 The first condition would require AECL to  
22 implement the improvement identified during the Integrated  
23 Safety Review and to report annually to the Commission on  
24 the status of the Integrated Implementation Plan.

25 The second licence condition is intended to

1 address concerns related to the decision on the continued  
2 operation or eventual shutdown of the NRU Reactor.  
3 Specifically, the condition would require AECL to develop  
4 and submit, for approval by the Commission, that is by  
5 June 30<sup>th</sup>, 2014, a plan to address either end of operation  
6 or continued operation of the reactor beyond the year  
7 2016.

8 This is to ensure that there will be a  
9 defined approach for the future of the NRU Reactor well  
10 before the expiry of the proposed licence.

11 Another important consideration for the  
12 Commission at Public Hearing Day One, was the lessons  
13 learned from the events at the Fukushima Daiichi nuclear  
14 power plant. As noted by Mr. Jammal, the CNSC issued a  
15 directive requiring AECL to review the initial lessons  
16 learned from Fukushima and to re-examine the safety cases  
17 for facilities at the Chalk River Laboratories.

18 In parallel to this request, CNSC staff  
19 carried out its own independent inspections on site.  
20 These included systems and components at CRL credited to  
21 either prevent or mitigate serious events.

22 CNSC inspections took place in the NRU  
23 Reactor, the nuclear fuel fabrication facilities and in  
24 the material storage areas.

25 The CNSC and AECL also reassessed the

1 priorities from the NRU Integrated Safety Review and  
2 adjusted accordingly the Integrated Implementation Plan.  
3 Specifically, this resulted in advancing, by a number of  
4 years, the completion of severe accident management  
5 guidelines for the reactor.

6 In addition, the IIP was adapted to add a  
7 seismic reassessment of the NRU Reactor. This activity  
8 will be initiated early after licence renewal.

9 In July, AECL reported to the CNSC the  
10 results of its review to address the CNSC directive. It  
11 confirmed that procedures and equipment are available to  
12 mitigate conditions that could result from beyond design  
13 basis events. The review also confirmed that backup power  
14 supply and flooding mitigation capabilities for facilities  
15 at the CRL are in place.

16 Although CNSC staff is following up on open  
17 action from the CNSC inspections and AECL's own review, no  
18 issues requiring immediate corrective or mitigating  
19 actions have been identified to date.

20 CNSC staff is currently confirming the  
21 adequate completion of AECL's short-term actions including  
22 addressing findings from CNSC inspections. We are  
23 reviewing AECL's plan and schedule to address  
24 opportunities for improvements identified in AECL's July  
25 submission and are reviewing AECL's plans and schedule to

1 address the longer-term findings from the events at  
2 Fukushima.

3 CNSC staff will review AECL's analyses and  
4 proposed actions. To do so, criteria developed by the  
5 Fukushima -- CNSC Fukushima Task Force for Nuclear Power  
6 Plants, have been adapted to take into consideration the  
7 specificities of the CRL site.

8 Further actions related to the Fukushima  
9 review will be incorporated and tracked through the  
10 Integrated Implementation Plan and the licence conditions  
11 handbook.

12 As a condition for NRU return to service  
13 following the vessel repair in the year 2010, the CNSC  
14 required AECL to submit two documents. The first is a  
15 final fitness for service assessment report and the second  
16 is an in-service inspection program to ensure the vessel  
17 condition is monitored during future operations.

18 As a condition of the Commission's approval  
19 in July 2010, AECL was to undergo a planned extended  
20 shutdown to inspect the vessel within 9 months of the  
21 reactor restart. These inspections were being performed  
22 at the time of Public Hearing Day One.

23 As reported by Mr. Jammal earlier, AECL  
24 encountered challenges during the extended shutdown and  
25 was not able to complete all the planned inspections.

1                   CNSC staff made clear to AECL that timely  
2 completion of the vessel inspections was required to  
3 update the NRU vessel fitness for service report.

4                   The majority of the planned inspections  
5 have since then been completed during monthly outages with  
6 no concerns identified, however, some key inspections  
7 remain outstanding, specifically, some of the volumetric  
8 inspections of the lower heat affected zone repair areas.

9                   CNSC staff considers that a well-executed  
10 inspection program is required to provide assurance that  
11 the NRU vessel remains fit for service.

12                   CNSC staff's position is that complete  
13 inspections of all weld-repaired areas are required. This  
14 is to provide a baseline for future inspections and to  
15 ensure the ongoing fitness for service of the NRU vessel.

16                   Completion of the in-service inspection of  
17 the NRU vessel remains incomplete. This is not consistent  
18 with expectations expressed by the Commission at the time  
19 of the reactor restart.

20                   CNSC staff has required AECL to provide  
21 corrective measures and related timelines. This matter is  
22 of concern to CNSC staff. Therefore, CNSC staff  
23 recommends that in its decision, the Commission request an  
24 update on the completion of the NRU vessel inspection in  
25 February 2012.

1                   This would allow the Commission, based on  
2                   the situation at the time, to direct AECL to either extend  
3                   a unplanned outage or to conduct additional extended  
4                   outages to ensure the inspections are completed.

5                   The Nuclear Legacy Liabilities Program was  
6                   established by the Government of Canada in the year 2006.  
7                   The program is to manage Canada's nuclear legacy  
8                   liabilities at the AECL sites.

9                   AECL is responsible for continued care and  
10                  maintenance of legacy waste areas and building at the CRL.  
11                  It is also responsible for remediation activities to  
12                  minimize the impact of past initiatives.

13                  The Nuclear Legacy Liabilities Program is a  
14                  70-year program funded in increments through the Natural  
15                  Resources of Canada. As described on Day One, AECL has  
16                  made progress during the first five years of the program.  
17                  It is planning additional projects and activities for the  
18                  proposed period of the renewed licence.

19                  Funding for the program has been approved  
20                  by the Government of Canada for an additional period of  
21                  three years to March 2014.

22                  In July 2011, the CNSC and AECL signed a  
23                  protocol for the licensing activities associated with the  
24                  Nuclear Legacy Liabilities Program. The protocol is  
25                  identified in the licence conditions handbook as a

1 compliance criterion. The protocol is publicly available  
2 on the CNSC website.

3 CNSC staff, finally, would like to touch on  
4 the public information program for the CRL. AECL's public  
5 information program is intended to provide stakeholders  
6 with timely and meaningful information.

7 The following are three main components of  
8 the AECL public information program.

9 In 2006, AECL established the environmental  
10 stewardship council for the CRL. The objective was to  
11 build relationships and to create opportunities for open  
12 dialogue with community stakeholders. The council members  
13 include representatives from First Nations, municipal  
14 governments, environmentally focused organizations and  
15 landowner associations.

16 AECL also produces bilingual community  
17 newsletters called "Contact", which profiles activities,  
18 major projects and initiatives. It is distributed to all  
19 residents of Renfrew and Pontiac Counties.

20 AECL has also made improvements to its  
21 website in an effort to provide information on activities  
22 and on planned events at the CRL.

23 As a note, CNSC staff participates as an  
24 observer in meetings of the environmental stewardship  
25 council.

1                   CNSC staff considers that AECL's public  
2 information program provides timely information to the  
3 public.

4                   I will now pass the presentation back to  
5 Mr. Elder to conclude.

6                   **MR. ELDER:** Thank you.

7                   CNSC staff concludes that AECL has operated  
8 the facility safely during this licence period. AECL's  
9 performance is acceptable and their programs have  
10 functioned as designed. AECL has made several  
11 improvements during this licensing period that have been  
12 detailed in this presentation.

13                   CNSC staff has made considerable effort  
14 since 2008 to clarify and document the requirements for  
15 the continued safe operation of the CRL site. This has  
16 resulted in a comprehensive licence conditions handbook as  
17 well as the Integrated Implementation Plan for NRU.

18                   One of CNSC staff's goals in this work was  
19 to establish requirements that were independent of the  
20 site operator. That is, CNSC staff's requirements would  
21 not change even if there were changes to AECL's  
22 organization.

23                   CNSC staff recommends that the outcomes of  
24 the Integrated Safety Review be included in the licence  
25 and that -- with detailed compliance verifications --

1       noting that detailed compliance verification criteria are  
2       in the licence conditions handbook.

3               As is normal practice, the handbook will be  
4       finalized after the Commission's decision to ensure it's  
5       consistent with the Commission's record of decision.

6               So we recommend that the Commission issue a  
7       five-year licence to AECL that includes the licence  
8       conditions for mandatory extended NRU outages and  
9       implementation of the NRU safety improvements. As well,  
10      as noted, we would recommend that AECL be required to  
11      clearly define its intentions for NRU beyond 2016 by the  
12      middle of 2014.

13              Since these improvements will be ongoing  
14      over the proposed licence period, CNSC staff recommends  
15      the Commission require AECL to report annually on progress  
16      at a public meeting.

17              Furthermore, we recommend that AECL provide  
18      an update to the Commission on the NRU vessel inspections  
19      in February 2012.

20              This concludes the presentation by CNSC  
21      staff and we are now available to answer any questions.

22              **THE CHAIRMAN:** Thank you.

23              Before opening the floor for questions, I'd  
24      like to turn to Ms. Stuart from Emergency Management  
25      Ontario for their presentation as outlined in CMD 11-

1 H7.2A.

2 Ms. Stuart, the floor is yours.

3

4 **11-H7.2A**

5 **Oral Presentation by**

6 **Emergency Management Ontario**

7

8 **MS. STUART:** Thank you very much.

9 For the record, I'm Allison Stuart,  
10 Assistant Deputy Minister within the Ministry of Community  
11 Safety and Correctional Services and Chief at Emergency  
12 Management Ontario. With me today are Dave Nodwell and  
13 Kathy Bleyer, both of Emergency Management Ontario.

14 We're pleased to continue the dialogue that  
15 was initiated on Day One of the hearings and continue to  
16 report on our activities related to the Chalk River site.

17 Section 8 of the *Emergency Management and*  
18 *Civil Protection Act* within the Province of Ontario  
19 requires the Lieutenant Governor in Council to formulate a  
20 plan to address emergencies arising from a nuclear  
21 facility. That responsibility has been delegated to  
22 Emergency Management Ontario.

23 In place, we have a Provincial Nuclear  
24 Emergency Response Plan which has a master plan and seven  
25 implementing plans that reflect the different sites, as

1 well as a more generic plan for other matters.

2 These have all been approved over time by  
3 the Cabinet of the Government of Ontario, most recently in  
4 2011.

5 Our plan, which we informally call the  
6 PNERP, is reflective of best practices and lessons learned  
7 from the number of exercises that you've heard about this  
8 morning and elsewhere.

9 It does not specifically address the  
10 consequence management of the Japanese experience, as that  
11 information will continue to evolve, but it will be part  
12 of our review going forward.

13 Given our focus on the consequences, we  
14 feel comfortable that we're in good shape as we stand now,  
15 but we'll continue to learn as we move forward.

16 The Act requires municipalities to have  
17 plans in respect of nuclear emergencies that -- in those  
18 areas where nuclear emergencies could occur, and the  
19 municipal nuclear emergencies plans must comply with the  
20 overall provincial plan that I referenced earlier.

21 For the Towns of Deep River and Laurentian  
22 Hills, they are designated communities under our plan and  
23 they are required to have nuclear emergency plans that  
24 conform to the expectations of the provincial plan.

25 Deep River also serves as a host community

1 to evacuated residents from within the Chalk River  
2 Laboratory primary zone.

3 The Chalk River Laboratories primary zone  
4 is 9 kilometres and it includes a population of around  
5 2080 individuals which constitutes -- 94 per cent of those  
6 are located in Laurentian Hills. These are the designated  
7 municipalities that are in closest proximity to Chalk  
8 River Laboratories.

9 These response zones for -- are provided in  
10 the overall provincial plan to allow planning of  
11 protective measures relevant to the different areas and  
12 the level of risk that might be experienced.

13 We've included some of the responsibilities  
14 under the Provincial Nuclear Emergency Response Plan to  
15 provide a context to the Commission and other interested  
16 parties with regard to where the accountability lies.

17 So you will see that the Towns of Deep  
18 River and Laurentian Hills have responsibilities for  
19 having a plan, which we've discussed previously;  
20 maintaining a 24/7 contact for notifications of nuclear  
21 events; and ensuring a public alerting system for the  
22 primary zone; making sure that there are appropriate  
23 measures in place at the local level to address and  
24 implement any protective measures that are required;  
25 public education programs, making sure that they're able

1 to provide emergency information if there were a nuclear  
2 incident; maintaining relationships and liaison response  
3 and supports with the nuclear facility and with the host  
4 community, that applies to Laurentian Hills; making sure  
5 that there are -- they have the ability to carry out any  
6 emergency response and any provincial directives that  
7 might be assigned.

8 As indicated previously, participate in  
9 training and exercises; and maintaining an appropriate  
10 infrastructure that allows for an emergency operation  
11 centre, telecommunications, and other things that are  
12 needed to respond at the time.

13 The AECL at the Chalk River Laboratories  
14 site have responsibilities that are complementary but  
15 different. They must ensure there are preparedness  
16 activities that include both the organization, the  
17 equipment and procedures to be undertaken; making sure  
18 that the Province and the designated municipalities are  
19 notified of any incidents in accordance with the  
20 requirements of the Nuclear Emergency Response Plan;  
21 funding, resourcing the public alerting system; assisting  
22 with the public education program which was referenced  
23 previously; providing personnel for response commitments  
24 and ensuring that, like the Towns of Deep River and  
25 Laurentian Hills, having the appropriate infrastructure;

1 making sure that they, too, participate in training and  
2 exercises which were discussed earlier; and, as applicable  
3 and relevant, conduct studies and research to enhance  
4 public safety.

5 The Municipal Emergency Response Plan is a  
6 requirement under the Provincial Nuclear Response Plan,  
7 and both Deep River and Laurentian Hills are required to  
8 have such a plan, each -- each by each. However, the  
9 Towns of Deep River and Laurentian Hills have prepared a  
10 joint municipal emergency response plan to reflect the  
11 local exigencies.

12 The most recent municipal plan is dated  
13 April 2007. Both Deep River's and -- sorry, Deep River  
14 and Laurentian Hills provided input into the Nuclear  
15 Emergency Response Plan implementing plan for the Chalk  
16 River Laboratories that were modified and subsequently  
17 approved by Cabinet in June of 2011 and released in July  
18 of 2011. And Deep River and Laurentian Hills have advised  
19 us that they have started to update their municipal plan  
20 and expect that it will be completed in March of 2012.

21 With regards to nuclear notifications, the  
22 Nuclear Emergency Response Plan at the provincial level  
23 requires Deep River and Laurentian Hills to maintain a  
24 24/7 contact. These are in place through fire and police  
25 services. A notification guide has been updated and is

1 currently under review.

2 Public alerting is a significant role for  
3 the municipal level, and the provincial plan outlines the  
4 expectations and standards for public alerting around all  
5 of Ontario's nuclear facilities.

6 The standard for Chalk River Laboratories  
7 is that the operator of the installation will provide  
8 resources and assistance to the designated municipalities  
9 who are in the primary zone to enable them to establish  
10 and maintain a public alerting system within that primary  
11 zone.

12 The public alerting system must provide,  
13 within 15 minutes of initiation, warning to the public in  
14 the primary zone, whether they be indoors or outdoors and  
15 regardless of the time of year or the time of day.

16 The public alerting system, along with  
17 public direction, emergency bulletins broadcast over radio  
18 and television, are designed to ensure that the population  
19 within the primary zone will be notified in an effective  
20 and timely manner.

21 So these are the overall expectations. The  
22 status of public alerting around the Chalk River  
23 Laboratories site is as follows.

24 In general, that the indoor alerting --  
25 there was a -- while there is a telephone notification

1 system in place, it was tested in April of 2011 and  
2 73 percent of telephone subscribers could be reached in 15  
3 minutes.

4 We understand that a second drill is  
5 planned for this fall and that there have been changes  
6 made to enhance the response rate. We will be monitoring  
7 at Emergency Management Ontario the results of that drill  
8 in terms of compliance with the expectations of the  
9 Nuclear Emergency Response Plan.

10 With regards to outdoor alerting, the  
11 mayors of both Deep River and Laurentian Hills agreed in a  
12 meeting with Emergency Management Ontario in May that the  
13 current system, which consists of loud hailers mounted on  
14 fire trucks, does not meet the standard expected and  
15 outlined in the Provincial Nuclear Emergency Response  
16 Plan.

17 The mayors have expressed their intent and  
18 commitment to ensuring that the standard is met as quickly  
19 as possible, and that expectation and that commitment have  
20 been reiterated since May 30<sup>th</sup>, and Emergency Management  
21 Ontario will continue to provide advice and support to the  
22 communities as they achieve this standard.

23 Any specific questions around the public  
24 alerting system for these two communities are best  
25 addressed by the communities themselves later in the

1 presentation.

2 In terms of protective measures, Deep River  
3 and Laurentian Hills are required to maintain appropriate  
4 local procedures to implement protective measures. This  
5 is an expectation of the Provincial Nuclear Plan.

6 While there isn't a requirement that  
7 potassium iodide be maintained, based on earlier work that  
8 has been done for this site, AECL does maintain a  
9 stockpile of potassiumiodine and the expectation is that,  
10 as required, if required, this supply would be provided to  
11 the local hospital.

12 There is an exercise planned for this fall  
13 of the emergency workers centre and this will be something  
14 that Emergency Management Ontario will be monitoring.

15 In terms of public education, there is an  
16 expectation to maintain a nuclear emergency public  
17 education program, and there is a plan underway between --  
18 with the support of Emergency Management Ontario -- for  
19 Deep River and Laurentian Hills to develop a new public  
20 education strategy.

21 Pamphlets have been updated for residences  
22 and for businesses and they are available at the town  
23 halls and have been distributed through local business,  
24 and a newsletter is being developed to send out to all  
25 residents in October 2011. This information is based on

1           our discussion with these two communities.

2                         In terms of emergency information, there is  
3           an expectation and an obligation to ensure that Deep River  
4           and Laurentian Hills provide emergency information in the  
5           event of a nuclear incident. This would be done through  
6           their Municipal Emergency Operations Centre, and they  
7           would coordinate with the Provincial Emergency Information  
8           Centre located in Toronto to ensure consistency of  
9           messaging at the local and provincial levels. Provincial  
10          liaison officers would be deployed to Deep River and  
11          Laurentian Hills to provide a liaison function and to  
12          ensure that consistency of messaging.

13                        I spoke of liaison arrangements under the  
14          nuclear plan at the provincial level. Deep River and  
15          Laurentian Hills are responsible for maintaining a liaison  
16          arrangement with the nuclear facility and the host  
17          community, and this is accomplished through the Deep River  
18          Laurentian Hills Nuclear Emergency Preparedness Executive  
19          Committee, and this committee has been meeting monthly  
20          since April of this year.

21                        Under the nuclear emergency response plan  
22          at the provincial level, there is a requirement for  
23          communities to carry out emergency response and be able to  
24          implement any provincial directives that are issued during  
25          a response.

1           After the municipal emergency response plan  
2           has been completed, which you'll recall was expected for  
3           early in 2012, Emergency Management Ontario will work with  
4           the communities to ensure that the new plan confirms --  
5           sorry, conforms with the Provincial Nuclear Emergency  
6           Response Plan.

7           In the exercise Chalk River 2007, the  
8           community was successful in implementing provincial  
9           direction based on their roles as defined in the  
10          Provincial Nuclear Emergency Response Plan and the  
11          provisions of their local plan, so any changes that have  
12          been introduced as a result of new plans will need to be  
13          reflected in the next exercise.

14          All impacted communities are required to  
15          conduct and participate in training and exercises, and we  
16          understand regular exercises have been held. There was a  
17          full-scale exercise in 2007, which has been previously  
18          mentioned, and it simulated a release from Chalk River  
19          Laboratories.

20          Protective measures were put into place and  
21          were appropriately carried out.

22          In 2009, the local evacuation centre was  
23          exercised, and on an annual basis, the emergency control  
24          group trains and exercises.

25          The last exercise was in 2011, and this is

1 a requirement, again, of the Provincial Nuclear Emergency  
2 Response Plan. And the Emergency Worker Centre I  
3 referenced earlier is being exercised later this fall.

4 The response infrastructure required  
5 includes having an emergency operation centre,  
6 telecommunications, other resources to allow them to  
7 respond appropriately in the event of an emergency, and  
8 this is done through their Emergency Operation Centre,  
9 which has a designated site at the Laurentian Hills Town  
10 Hall.

11 So in summary, the government of Ontario,  
12 the Cabinet-approved Provincial Nuclear Emergency Response  
13 Plan provides for an effective response to nuclear  
14 emergencies in Ontario. The -- within that plan, there is  
15 delineation of obligations and expectations of  
16 municipalities and for this particular situation, the  
17 Mayors of both Deep River and Laurentian Hills have  
18 committed to attaining and maintaining full compliance  
19 with the requirements of the provincial plan.

20 Designated communities have reported on  
21 work plans to address current gaps, which include the  
22 installation of an outdoor alerting system, and the  
23 publication of an annual public education strategy.

24 Thank for you this opportunity to update  
25 the Board.

1                   **THE CHAIRMAN:** Thank you very much.

2                   We now have got to move to the -- this is  
3 day two, and it's dedicated to interventions, so we want  
4 to give as much time as possible for those who want to  
5 appear in front of us.

6                   So what I would want to do is do a first  
7 round of Commissioners asking quick questions, and then we  
8 will have the interventions -- and presumably you're going  
9 to give quick answers.

10                  And we're going to have then a second round  
11 at the end after we've heard all the interventions so we  
12 have all the information in front of us.

13                  So if that's agreeable, I'd like to start  
14 with Dr. McDill, please.

15                  **MEMBER McDILL:** Thank you. Good morning.

16                  Relicensing of CRL covers a huge range of  
17 issues and concerns, and I'm sure my colleagues will pick  
18 up on many.

19                  In this round, I'd like -- and I'm sure  
20 you're expecting me to ask about the inspection of the  
21 vessel.

22                  The repairs to the vessel were, I think, an  
23 engineering achievement in terms of numerical analysis,  
24 tool development and physical execution, but the very fact  
25 that it was a one of a kind repair means that there is

1 very limited, if any, international experience to draw  
2 upon. And so the inspections, to me, are critical. And I  
3 think staff has said that as well.

4 So my first question, recognizing that this  
5 is -- was a one of a kind engineering achievement, staff,  
6 on page 14 of 11-H7.D you said you believe the deferral of  
7 the inspection does not represent an immediate risk to  
8 continued operation.

9 And I would like you to confirm that you  
10 believe that, and then I have another question.

11 **MR. ELDER:** So Peter Elder, for the record.

12 Yes, we believe it is not an immediate  
13 risk. This is going back to based on two facts, the fact  
14 that it was a full leak test done after the repair was  
15 done, so there was a visual test, but also leak tests of  
16 the whole vessel, and it passed all those ones.

17 Again, we have very -- there's very  
18 detailed leak monitoring capability, so there's no  
19 indication of any actual leak. The other one is based on  
20 AECL's modelling of the vessel and potential for -- the  
21 potential for crack growth.

22 So they're saying there isn't much  
23 potential given the stresses it gets during normal  
24 operation.

25 That said, there's always some uncertainty

1 on that sort of calculation, and we would strongly prefer  
2 that there be actual measurements to confirm that there is  
3 nothing there to grow in the first place.

4 **MEMBER McDILL:** Thank you.

5 And then to AECL, I think the biggest part  
6 of this is the public's trust in AECL's ability to do what  
7 it says it will do in the time that it says it will do it  
8 and make those commitments and then live up to it.

9 So I recognize that there has been a  
10 challenge in the tools for this inspection, but you're in  
11 the business of operating a research reactor, so technical  
12 tools and difficult technical tasks should be well within  
13 your technical ability. Pardon the repetition.

14 So what is left to be done, and when will  
15 it be done?

16 **MR. LESCO:** So Randy Lesco, for the record.

17 Basically, the -- what is left to be done  
18 are inspections of the lower HAZ, or lower heat-affected  
19 zone, of the welds. To date, we have completed three of  
20 those weld sites using ultrasound inspections.

21 We've used alternative techniques called  
22 Eddy current inspections that will look for surface or  
23 sub-surface indications. And they've been completed on  
24 six sites.

25 We have submitted a plan to staff to

1 complete the remaining volumetric inspections on those  
2 outstanding locations. The plan is to complete them in  
3 October, December and January during regular maintenance  
4 outages, and we have other locations that we had planned  
5 to complete during our extended outage in April 2012,  
6 recognizing that we have gathered data through video  
7 inspections as well as Eddy current inspections to  
8 demonstrate that the vessel is good for service.

9 **MEMBER MCDILL:** And what's been the most  
10 difficult challenge that had to be overcome?

11 **MR. LESCO:** Randy Lesco, for the record.

12 When we went into the extended outage in  
13 the spring, there were basically three issues that we had  
14 to deal with.

15 First is that we had to deal with first-of-  
16 a-kind tooling, the fact that we had to go in there, try  
17 to inspect those locations with reactor fuel. The core  
18 was full of fuel. We did experience challenges with that  
19 tooling. We did have things that we had to repair during  
20 the inspection.

21 The second thing is that the repairs were  
22 taking longer than had been planned -- the inspections,  
23 sorry -- the inspections were planned.

24 The third thing is it was recognized that  
25 we had to develop an alternative ultrasonic head to

1 inspect a number of locations at the lower HAZ. We have  
2 learned from that and that the inspections that we  
3 completed during our July-August regular maintenance  
4 outages were completed as planned and on schedule.

5 The development of our additional  
6 ultrasonic testing head is currently under way, with the  
7 expectation it will be available for deployment in a  
8 November time frame.

9 **MEMBER MCDILL:** But you did not foresee the  
10 need for these new heads when you started the original  
11 outage.

12 **MR. LESCO:** Randy Lesco, for the record.

13 That is correct. During our extended  
14 outage in the springtime, it was recognized during the  
15 deployment of our ULTRASONIC TESTINGheads -- it was  
16 recognized that we needed an additional head to complete  
17 the lower HAZ inspections of a couple of locations.

18 **MEMBER MCDILL:** Thank you. One more  
19 question, Mr. Chair, on this section.

20 There are some tantalizing words that I'd  
21 like to have clarified in AECL's submission; again, 11-  
22 H7.1D written submission from -- yeah, it's -- and it's on  
23 page 411.

24 And these are words that I would like  
25 addressed for the public because I think a public person

1 reading these words might be concerned. So in Section 2,  
2 for example, you say:

3 "Visual inspection of the annulus for  
4 wetted surfaces on the inner vessel  
5 wall as specified, there were no areas  
6 of wetting of concern."

7 That suggests there were areas of wetting  
8 that weren't of concern. And down below under B12:

9 "Additionally, known indications in  
10 the upper heat-affected zone and the  
11 plate edge welds showed no significant  
12 changes."

13 Which suggests there were changes that were  
14 not significant. And any change like that is going to be  
15 something of concern to the public, whether it's a  
16 significant or not significant, so perhaps you could just  
17 explain how you identify whether something was of concern  
18 or was significant.

19 **MR. LESCO:** So Randy Lesco, for the  
20 record.

21 Basically, when we go back and repeat  
22 our inspections at those weld locations and look for any  
23 changes in those indications, basically what we're saying  
24 is that within the accuracy of the inspection technique,  
25 we were seeing no change to those reported indications.

1                   **MEMBER MCDILL:** And staff, would you  
2 like to comment on that as well, please?

3                   **MR. ELDER:** Okay, I'm going to start  
4 on this and then ask one of our specialists, who is in  
5 Ottawa, so we're going to test our technology back to  
6 them. There may be a little delay while they get ready,  
7 so I'll give a heads up to Blair Carroll to get ready to  
8 answer.

9                   We agree, in general, with those  
10 results, is there were very specific conditions that were  
11 seen in the annulus before the repairs in terms of  
12 standing water pools and things like this, and these were  
13 to be the areas that we wanted focus inspection if they  
14 saw similar conditions in there; not that -- we know the  
15 annulus is not completely dry, but there were various  
16 standing pools and things like that that we would say  
17 needed inspection based on -- inspection of the vessel  
18 wall based on what you saw visually.

19                   Now I'll ask Blair if he wants to add  
20 any more.

21                   **MR. CARROLL:** For the record, Blair  
22 Carroll.

23                   With regards to the known indication  
24 in the upper heat-affected zone of one of the repair  
25 areas, we have not seen the actual inspection data yet,

1 but we just received recently an updated condition  
2 monitoring report for the vessel. And within that  
3 condition monitoring report, AECL has indicated that the  
4 indications have not changed within the bounds of the  
5 measurement uncertainty of the tools, which is  
6 approximately plus or minus three millimetres in length,  
7 so we would agree with if that is the result, that there  
8 would be no significant change to that indication.

9 **MEMBER McDILL:** So that was the first  
10 thing you had seen with respect to that item in the upper  
11 heat-affected zone?

12 **MR. CARROLL:** Blair Carroll, for the  
13 record.

14 We knew that indication existed based  
15 on the post-repair inspections. In August, we had  
16 received an update from AECL indicating that there was no  
17 significant change.

18 I had also questioned what was meant  
19 by the word "significant", and in follow-up to that in  
20 September, they provided us with an indication of the  
21 measurement tool uncertainty, which was plus or minus  
22 three millimetres.

23 **MEMBER McDILL:** Thank you.

24 So it's within the ability to detect  
25 the change.

1                   **MR. CARROLL:** That is correct.

2                   **MEMBER McDILL:** Thank you back in  
3                   Ottawa.

4                   **THE CHAIRMAN:** Just to put this in  
5                   perspective, the two views on this, you're taking a risk  
6                   by not fully completing the measurement. You're assuming  
7                   the thing is safe and because if there were a doomsday  
8                   scenario and a leak sprung now, it's going to be a  
9                   disaster for you operationally. But what would be the  
10                  safety issue, okay?

11                  So let's assume you haven't completed  
12                  and something -- you don't know what you don't know. And  
13                  if something -- there's a leak sprung somewhere -- I'm  
14                  trying to relate that to the safety issue.

15                  Is there any safety concern? It's  
16                  different from operational concern.

17                  Staff, you want to start?

18                  **MR. JAMMAL:** For the record, Ramzi  
19                  Jammal.

20                  Sir, if there was any safety concerns,  
21                  we will not be recommending to you to issue them a  
22                  licence. It's a reliability issue.

23                  The process of the repair is very well  
24                  known and the conduct of the inspection, and I will refer  
25                  you to page 12 of staff CMD and the table on the

1 completion of the inspections that were done to date. And  
2 it's becoming a reliability issue. And as a condition of  
3 the restart, they must conduct inspections to establish  
4 baseline.

5 So again, there is no immediate safety  
6 because the information that we have to date and the  
7 inspections that were done to date has confirmed from  
8 safety perspective that there are adequate safety measures  
9 in place and there are no immediate safety risks. So it's  
10 become a reliability issue and establishing the baseline  
11 for the future of the operations.

12 **THE CHAIRMAN:** AECL, do you want to  
13 add anything to this?

14 **MR. LESCO:** Yeah, so it's Randy Lesco,  
15 for the record.

16 Clearly, during the initial repair, we had  
17 to understand the complete condition of the vessel through  
18 inspections. And through that process, we had a complete  
19 understanding of the vessel, the mechanisms associated  
20 with this corrosion, and that led us to where we needed to  
21 repair, where we needed to inspect and where we needed to  
22 monitor.

23 And we have gathered a lot of data  
24 associated with the weld repairs as well as our continuing  
25 on with our corrosion monitoring, which gives us

1 confidence that the issues as Mr. Ramzi has stated that  
2 it's really about reliability. And should a leak do  
3 develop, we would have ways of managing it.

4 **THE CHAIRMAN:** Okay, thank you. Let's  
5 move on.

6 Mr. Tolgyesi?

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

9 You know, when we are looking, the  
10 management systems and fitness for service areas were  
11 expressed also in 2006 licence renewal. So it's not  
12 something new. We are five years later but it's still the  
13 same concerns.

14 So how AECL will do and how staff will  
15 ensure that these concerns are resolved to the  
16 satisfaction promptly and on time?

17 **MR. LESCO:** Randy Lesco, for the record.

18 With respect to our management system --  
19 and there's really two parts to it. One is our management  
20 system or quality system, and the second part is really  
21 our safety culture.

22 I can speak to the first part with respect  
23 to our management system. Let me start off by saying that  
24 we've made the necessary changes in our leadership to  
25 demonstrate that we can make the necessary improvements in

1       our management system.

2                   We have put in place a new management  
3       system manual to demonstrate we will comply with the  
4       requirements of the CSA standard on quality management  
5       together with meeting the needs of the Treasury Board  
6       management accountability framework as well at the same  
7       time.

8                   If I can speak to -- and to continue on,  
9       we've made a commitment to the CNSC staff on our approach  
10      and our plan as part of the licence conditions handbook,  
11      to move forward on our management system.

12                  If I can speak to our safety culture, we're  
13      moving ahead with our Voyageur II program that outlines  
14      the actions and plans that we're taking to improve our  
15      safety culture.

16                  We will also be getting feedback from the  
17      staff through our quarterly safety culture reviews to  
18      ensure that we address those issues and actions as we move  
19      forward.

20                  **MR. ELDER:** Peter Elder, for the record.

21                  I think I'll address the -- both points  
22      again.

23                  On the management system, we have -- one is  
24      clearly define what we expect to see in the licence and in  
25      the handbook, so this is a bit of a change, envision new

1 standard.

2 We have required them to develop a detailed  
3 transition plan for that new standard, and that allows us  
4 to get something that we can track, you know, so there is  
5 traceable progress so that we don't, you know, it's not a  
6 -- this will be done in a future date, we have multiple  
7 milestones that we can measure progress on.

8 And there has already been measurable  
9 progress. Again, they developed their management system  
10 manual, the high-level material is in place, and then it's  
11 making it connect into the day-to-day operations of the  
12 facility.

13 On safety culture, it's a very similar  
14 thing. We started in -- to work -- require in 2009, that  
15 they have a detailed plan to address the safety culture  
16 improvement. This is the Voyageur II. They're -- were  
17 about 18 months into that plan. To date, we have done  
18 another detailed follow-up and we are able to report that  
19 progress is on track on that plan.

20 So in the end this is -- I think is their  
21 indicator. I think if you asked us -- and I think we did  
22 say, we were some sceptical in June and July of last year  
23 whether they would be able to do this. But, to date, they  
24 are on track on that plan and that's a very good indicator  
25 that they will continue to be able to make progress on

1       that one.

2                       So I think the things that have changed, is  
3       make sure that there is -- when there is a commitment we  
4       say not just, "Well that's nice, you made a date". It's  
5       that, okay, you give us the details of how you're going to  
6       meet that commitment. And it's a change that we've done  
7       with the Integrated Implementation Plan as well to make  
8       sure that there are detailed plans that we can monitor  
9       progress and flag any difficulties early to make sure they  
10      get resolved.

11                      **MEMBER TOLGYESI:** Do you expect the kind of  
12      annual report where we are -- you are expressing what's  
13      the progress and where we stand behind or we are on time?

14                      **MR. ELDER:** Peter Elder, for the record.

15                      We are recommending that AECL come and give  
16      you exactly status of progress and so whenever they come,  
17      we would also come with the staff's view of what we've  
18      been be able to confirm through our inspections and other  
19      oversight.

20                      So there would be an annual report that  
21      will give progress, yes.

22                      **MEMBER TOLGYESI:** I will have in this first  
23      round maybe two, three questions on the lessons learned  
24      from Fukushima, and the staff report -- one question,  
25      okay.

1                   So on the staff presentation on page --  
2                   document 11-H7.D and it's part 2.3, they are saying that  
3                   following the CNSC inspection of NRU electrical systems,  
4                   there were questions raised regarding consistency between  
5                   the capabilities of the rectifier and the power supply and  
6                   assumptions in the safety analysis report. And there was  
7                   a request -- a kind of prompt resolution for September 29.

8                   What was the potential risk involved and is  
9                   it resolved because we are at October the 4<sup>th</sup>?

10                   **MR. ELDER:** Peter Elder, for the record.

11                   I'll start with what the potential risk was  
12                   and then we'll pass it to Mr. Carrier in terms of where we  
13                   are on the issue.

14                   The risk is there's a potential that if all  
15                   the -- this is part of their electrical system, so it  
16                   manages the loads that were placed on -- the batteries  
17                   have to function.

18                   So the risk would be if -- it appeared from  
19                   our review of the system and capabilities versus what it  
20                   potentially had to do, is there was a mismatch and if you  
21                   asked it to do -- manage all those loads at the same time,  
22                   it may not be able to do that. And what happens in the  
23                   electrical system, if you overload it, it tends to not  
24                   work at all.

25                   So that's the risk, is that some of their

1 backup supply -- electrical supply would just fail to  
2 work.

3 And Mr. Carrier can you give an idea of  
4 where we are on that issue because what we identified was  
5 a mismatch between what was documented and what we saw in  
6 the design documentation. It doesn't mean that -- they  
7 can't both be right and we needed to find out which one is  
8 right and not right.

9 **MR. CARRIER:** Christian Carrier, for the  
10 record.

11 Following production of that CMD and  
12 submission to the Commission, we sent another letter to  
13 AECL clarifying precisely what our expectations were  
14 regarding resolving of that issue.

15 So we clarified those expectations to AECL  
16 and I understand that by last Friday -- AECL has, on a  
17 piecemeal fashion, provided information to us on  
18 electrical load list and how they felt that they were  
19 compliant.

20 AECL thought at that stage that had  
21 completed the information, that they had demonstrated that  
22 actually the rectifiers were meeting the requirements.

23 As of to date, we requested additional  
24 information from AECL because we did not feel that the  
25 information provided provided sufficient information to

1 demonstrate that this indeed was the case.

2 I understand that by last Friday additional  
3 information was submitted but you may understand that we  
4 didn't have time to review it by the Commission hearing.

5 We also requested one thing from AECL.  
6 This issue remains a bit unclear to CNSC staff, so in the  
7 end I think on a technical basis, on the calculation  
8 basis, you can demonstrate lots of things but there were a  
9 number of difficulties with the upgrade, so what we told  
10 AECL is that what our expectation is, when all these  
11 issues would be discussed and finalized on paper and all  
12 those discussions regarding calculations may have come to  
13 a satisfactory conclusion, we would still expect AECL to  
14 do an integrated test with realistic loads to actually  
15 demonstrate that the thing actually functions.

16 So there's nothing better than actually  
17 testing it in an integrated fashion.

18 **MEMBER TOLGYESI:** Do you have any comments  
19 to add?

20 **MR. LESCO:** Randy Lesco, for the record.

21 Based on the information that we provided  
22 the CNSC staff, we're satisfied that the rectifiers will  
23 meet the requirements as designed.

24 There are no discrepancies between design  
25 documentation and the safety analysis report. We're also

1       planning to do a testing to verify the analysis which  
2       we're currently in the planning stages.

3               **THE CHAIRMAN:** Okay, it is my understanding  
4       that we're very constrained with our lunch. It's to be at  
5       12:30, but there's no constraint in the afternoon. I'm  
6       giving you a warning now. So the afternoon will be long.  
7       We're going to take an hour and 15 minute break, and come  
8       back, and then we'll have to break for 12:30. Thank you.

9

10      --- Upon recessing at 10:54 a.m.

11      --- Upon resuming at 11:15 a.m.

12

13               **THE CHAIRMAN:** Okay, we're back, and a  
14      little bit of a change in plan to accommodate some NRCan.  
15      Just to point out that last time the CNSC held a public  
16      hearing in Chalk River we stayed until 10:00 at night, so  
17      you should appreciate the accommodation we're making here.

18               And since we have NRCan here, I think it's  
19      maybe a good opportunity for -- to share with us whatever  
20      you can about the way of the future of this facility, when  
21      will we know what the future is, when the government will  
22      pronounce on it.

23               Maybe you can even share with us when the  
24      deal will close, and maybe, is there any thinking -- I  
25      know everybody would like to know the long term. We're

1 dealing with nuclear, which normally is a long-term kind  
2 of a vision. Is there any inkling about thinking beyond  
3 2016?

4 So over to you, NRCan.

5 **MS. CLEROUX:** Good morning, Mr. President.

6 My name is Cécile Cléroux. I am the  
7 Assistant Deputy Minister at Natural Resources Canada,  
8 responsible for the restructuring of Atomic Energy Canada  
9 Limited.

10 So thank you for accommodating us. We are  
11 awaited back in Ottawa at the end of the afternoon, so we  
12 appreciate the gesture.

13 So, to answer your question, the  
14 transaction with SNC Lavelin has closed on Sunday,  
15 October 2<sup>nd</sup>. We are, therefore, entering into the second  
16 phase of the restructuring of the AECL. We are proceeding  
17 with finalizing the analysis of the options that will be  
18 brought forward to ministers to be able to assess what  
19 would be the preferred path to be explored. So at this  
20 stage, we are still in the early days of what will be the  
21 approaches to the restructuring.

22 We are in the situation where ministers  
23 will have to take into account the result of the Phase 1,  
24 as well as what would be the most appropriate management  
25 structure, governance structure, the operational approach,

1 the funding approach and all of that, will be part of the  
2 decisions that will orient the rest of the work that will  
3 be done.

4 So when you are asking about the  
5 prospective or long-term about -- that it be post 2016, it  
6 is quite premature for us to be able to provide any  
7 guidance, because we first need to have the decisions of  
8 ministers about what would be the preferred approach and  
9 the path forward. So it's about, probably, two years away  
10 before we're going to be able to have a sense of what will  
11 be the future past 2016.

12 **THE CHAIRMAN:** Do you understand the  
13 concern that if a decision has been taken to shut down the  
14 NRU, for example, in 2016, then the Commission would  
15 expect a submission in front of us somewhere in 2014, just  
16 to make sure that there is proper planning for shutdown.  
17 This is not like a turning of the switches; this is a  
18 nuclear power plant and requires some consideration. So  
19 that's why we are demanding this kind of a heads up.

20 **MS. CLEROUX:** Cécile Cléroux.

21 So, for sure, we do understand that this is  
22 not a car that you turn off the switch; we understand that  
23 properly.

24 So this is part of the recommendations to  
25 ministers as we are going to proceed forward with the re-

1 structuring, to be able to take into account the timelines  
2 and to be able to make decisions.

3 Right now, the only decisions we know about  
4 the NRU is that it will stop the production of medical  
5 isotopes. There is no decision about ceasing the  
6 operation of the NRU past 2016. At the same time, there  
7 is no decision to continue operation of the NRU past 2016.

8 So we are conscious that, to be able to  
9 execute or implement the decisions of Cabinet, we will  
10 need to provide the proper guidance in time for the  
11 timelines for the Commission to be able to review whatever  
12 will be the proposal being brought forward.

13 We do think, with the timeline that we have  
14 before us, it will -- we'll be able to make everything  
15 converge.

16 **THE CHAIRMAN:** Maybe another line, one  
17 other question, about maybe -- and this is a maybe more  
18 for the public.

19 It's always good to hear about the  
20 government commitment for dealing with the legacy  
21 liability, the waste, and all the liabilities that are  
22 on-site at Chalk River. I know that -- I think in one of  
23 the submissions it mentions that there's an on-going  
24 commitment by the Government of Canada.

25 I just want to hear whether you can share

1 with us again what is the commitment. Even, I think,  
2 there's some numbers that have been thrown around in terms  
3 of how much monies are allocated for this, and I  
4 understand from the submission that the next three years  
5 already are being approved.

6 **MS. CLEROUX:** Cécile Cléroux.

7 So the commitment of the Government of  
8 Canada is to handle everything that is related to the  
9 legacy waste. It is a plan that is estimated to take  
10 about 70 years to be able to get to the end of all of the  
11 waste that has been accumulated. The increments that are  
12 being agreed upon, the budget that are being allocated,  
13 are related to specific activities that can be taken care  
14 of in the short to medium term. At this time the  
15 government has decided to go with an increment of three  
16 years, because of the restructuring.

17 So, as part of the future, it's not a  
18 question of are we going to handle or to take care of the  
19 waste; this is an ongoing commitment over the next 70  
20 years. It's more a question of how will it be done, and  
21 what will be the funding at the appropriate time,  
22 depending on the decision that will be made about the  
23 future of the nuclear labs.

24 So there is an increment of three years  
25 that has been approved, that is now in force, in this

1 fiscal year, and for the following two fiscal years, and  
2 this is the next tranche would correspond to the -- what  
3 we are right now expecting as the end of the period of the  
4 restructuring.

5 So by the time we will get the final  
6 decisions of government about the future, we will be able  
7 to determine what will be the next increment for the  
8 Nuclear Legacy Liability Program, but there is no doubt  
9 that government is committed to the end. For us, this is  
10 the baseline. Whatever we do with the nuclear labs, there  
11 is, at minimum, the waste to be taken care of, and for the  
12 next 70 years.

13 **THE CHAIRMAN:** Thank you. Any questions  
14 from Commissionaires? No? Okay, thank you. I'm sure  
15 there will be all kinds of others that come from the  
16 interventions, and I'm not sure you're going to be around  
17 here, but you can actually tune in from wherever you are  
18 and see the discussions going on with some of the  
19 interventions, that deals with advice to the government.

20 I'm going to continue with our questions,  
21 and I think we are now to Dr. Barriault?

22 **MEMBER BARRIAULT:** Thank you, Mr. Chairman.  
23 My first question is to AECL on the issue  
24 of liaison with the Emergency Management Ontario in a case  
25 of emergencies.

1                   You have a facility alert, you've got a  
2 site alert, and you have part of the off-site network  
3 alert system.

4                   I notice in the presentation that there's a  
5 liaison with the Ontario sites, the Ontario  
6 municipalities, but across the river obviously is the  
7 Province of Québec. Do you have an alternate system with  
8 the Province of Québec also, the same as you do with the  
9 Ontario EMO?

10                   **MR. LESCO:** Randy Lesco, for the record.

11                   I'd ask Cathy Fisher, program authority for  
12 emergency preparedness, to respond to your question.

13                   **MS. FISHER:** For the record, Cathy Fisher.

14                   First, I'd like to put into context, on the  
15 Québec side within the Chalk River Labs primary zone,  
16 there are no permanent residences. There are two  
17 cottages.

18                   When we have an emergent or emergency  
19 situation at the Chalk River site, our emergency  
20 operations centre does certain notifications. One of them  
21 is with Sûreté Quebec. They also are part of the  
22 Provincial emergency operations centre, they have a seat  
23 on that emergency operations centre, so they get all  
24 updated information from the site as to the status of the  
25 emergency.

1                   Based on that information, they make  
2 decisions about what type of alerting that they wish to do  
3 within the province.

4                   **MEMBER BARRIAULT:** So it's not directly  
5 with the Emergency Management Ontario of Quebec, but with  
6 the Sûreté du Québec.

7                   **MS. FISHER:** That is correct.

8                   **MEMBER BARRIAULT:** Okay. My next question  
9 deals with the Emergency Management Ontario presentation,  
10 and one of the local systems of internal communications is  
11 the telephone system. And I don't know if you people are  
12 aware, but we've had an incident in New Brunswick last  
13 week where three-quarters of the province lost all line  
14 communications throughout the province.

15                   I know it's an exception. The back-up  
16 system failed also. We had no 911 systems. We had no  
17 land-line communications for a period of between eight to  
18 -- well, almost eight hours total from start to finish.

19                   Part of it was a rolling problem; they  
20 would cut off one section to bring on another.

21                   But all of that to say, really, that we  
22 rely on the telephone, obviously, and we assume -- and I'm  
23 saying assume -- that it's going to work whenever we need  
24 it. But there's a prime example where it did not work  
25 when it was needed.

1                   We had no inter-hospital communications  
2 whatsoever. We had no 911, as I mentioned. So it's  
3 obviously something that has to be looked at in the system  
4 of internal communications.

5                   Secondly is that I am not certain at this  
6 time that we have adequate external communications between  
7 all parties concerned.

8                   Am I correct in assuming this, if I can  
9 address this to the EMO?

10                  **MS. STUART:** Allison Stuart, for the  
11 record.

12                  In terms of the first question regarding  
13 what to do if the phones aren't working, there are several  
14 other approaches that can be used and would be used in  
15 addition to the telephones, regardless.

16                  One is emergency bulletins that go out over  
17 radio and television. Another is in -- and I'm speaking  
18 generally now -- in settings where the outdoor sirens and  
19 so on are in place, then that would be happening.

20                  As well, the province is able to send out  
21 red alerts, and these red alerts can be used for any kind  
22 of event where we expect the public to take some action.  
23 We would also use the red alert system.

24                  None of these is 100 percent, and that's  
25 acknowledged. However, the overlap of the several

1 systems, we believe, would provide good penetration in any  
2 community.

3 The second question in terms -- actually,  
4 if you would repeat the second question, that would help  
5 me. Thank you.

6 **MEMBER BARRIAULT:** My second question is,  
7 we have systems in place for internal/external  
8 communications and alerts, but are we satisfied that the  
9 system for this area, in relationship to AECL, is adequate  
10 to notify the communities that we have a problem?

11 What I'm hearing is that I'm not sure that  
12 that's in place now, and it won't be in place until the  
13 beginning of next year, if I'm correct.

14 **MS. STUART:** Allison Stuart, for the  
15 record. And thank you for repeating the question for my  
16 mind and my memory.

17 In terms of this community, we have not  
18 been satisfied that the expectations of the Provincial  
19 Nuclear Emergency Response Plan regarding public alerting  
20 have been met.

21 We have, however, had a positive response  
22 in -- since May with regards to public alerting and moving  
23 that forward, both the internal inside the house kind of  
24 alerting or inside the business kind of alerting through  
25 the telephones, to be followed by work on the external

1 alerting as well.

2 We hold and expect the municipalities to  
3 meet those expectations and those obligations, and we'll  
4 support them as they do so. But at this point, we do have  
5 a concern.

6 **MEMBER BARRIAULT:** Thank you.

7 **THE CHAIRMAN:** Can I jump in?

8 I'd like to understand precisely the  
9 accountability scheme here. I hear should, could, would,  
10 expect.

11 What I'm trying to understand is who's --  
12 can you force them to take action? I mean, we're going to  
13 hear from some of the mayors here in a few minutes.

14 You know, Fukushima did one thing; it's put  
15 -- it's shone the light on emergency planning and who does  
16 what and how the accountability scheme works.

17 And what I want to make sure is that we  
18 understand exactly who is responsible for what and they  
19 have the authority to actually make sure that it's in  
20 place.

21 **MS. STUART:** Allison Stuart, for the  
22 record.

23 Very good question and one that we struggle  
24 with a lot.

25 The expectation -- there is legislation

1 that outlines the expectations and the accountabilities.  
2 The -- we're responsible for having a Provincial Nuclear  
3 Emergency Response Plan. The municipalities are  
4 responsible for ensuring that their local delivery is in -  
5 - aligns with that Provincial Nuclear Response Plan.

6 We have no ability to -- we can -- we  
7 direct the municipalities to respond. In terms of what  
8 are the consequences if they don't -- a question that I  
9 asked not too long ago -- and there are no consequences in  
10 legislation.

11 The responsibility is left with the  
12 municipality to have appropriate measures that are in  
13 alignment with the provincial plan.

14 **THE CHAIRMAN:** I'm looking forward to some  
15 of the municipality presentations in a few minutes.

16 Dr. Barriault?

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

18 Next question is for AECL.

19 Obviously, I'm sure you must feel a  
20 responsibility towards the communities in the area, and  
21 I'm wondering what prodding, if I can use that word, that  
22 you've done to the local communities to make sure that the  
23 systems are in place.

24 Has there anything been done to encourage  
25 them, to support them financially, mentally?

1                   **MR. LESCO:** Randy Lesco, for the record.

2                   Clearly, our obligations under the  
3                   Provincial Nuclear Emergency Response Plan are clear, and  
4                   that I would ask Cathy Fisher to provide you how we're  
5                   meeting those obligations, clearly that both support in  
6                   terms of meeting with the municipalities on a regular  
7                   basis as well as providing the necessary financial support  
8                   to the municipalities.

9                   So I'll turn it over to Cathy Fisher to  
10                  speak to those details.

11                  **MEMBER BARRIAULT:** Thank you.

12                  **MS. FISHER:** Cathy Fisher, for the record.

13                  So one of the ongoing communication  
14                  networks we have with the local municipalities is the Deep  
15                  River Laurentian Hills Nuclear Emergency Preparedness  
16                  Executive Committee. So from this point on I'll just call  
17                  it the local emergency committee.

18                  So the committee has recognized that with  
19                  changes to the most recent PNERP, previously, the outdoor  
20                  alerting was managed in such a way that the requirement  
21                  was to notify the population in the affected area of the  
22                  primary zone. So with the information that AECL supplies  
23                  to the municipal emergency operations centre, they could  
24                  specifically send their loudhailer trucks to the persons  
25                  who would be in that wind direction.

1                   With the new requirements, it is to notify  
2 everyone within the affected area within 15 minutes. So  
3 when they did the testing in the spring, they realized  
4 that they couldn't quite meet that requirement. It would  
5 take them longer.

6                   So we have been working with them as far as  
7 identifying what should be done as a go-forward. The  
8 municipalities have brought in nuclear partners from other  
9 areas to look at what they've done in other communities.  
10 A bid process has gone out to have an outdoor alerting  
11 system put in play that would meet the emergency  
12 management operations standards. And so that process is  
13 ongoing.

14                   In the interim, the process for ensuring  
15 that the persons in the affected area would be notified  
16 first is still in play and, therefore, we have confidence  
17 that we would have opportunity to evacuate those persons  
18 first if needed.

19                   **MEMBER BARRIAULT:** Thank you.

20                   CNSC, do you have a system in place to  
21 monitor that this is actually happening?

22                   **MR. JAMMAL:** For the record, my name is  
23 Jammal.

24                   I will -- before I pass it on to Mr.  
25 Sigouin, who is our Director of Emergency Measures and

1 Preparedness -- is yes, our staff is overseeing and  
2 engaged with trials and dry runs and so on and so forth.  
3 But I will pass on the microphone to Luc Sigouin.

4 **MR. SIGOUIN:** Luc Sigouin.

5 So in answer to the question, yes, we do  
6 have mechanisms in place. We have -- CNSC staff have an  
7 Memorandum of Understanding in place with Emergency  
8 Management Ontario that we use as the basis for  
9 communication with Emergency Management Ontario to  
10 understand what the situation is and to provide guidance  
11 and support and encouragement to Emergency Management  
12 Ontario and participate in forums with them regarding  
13 these issues.

14 And we are in contact with -- staff is in  
15 contact with the municipalities to understand where the  
16 situation is at and to report on that.

17 With respect to the licensee, part of the  
18 emergency inspections that we do is to verify that they  
19 are indeed meeting the requirements of the CNSC in  
20 providing support to the offsite authorities. As well as  
21 -- we do verify if they're meeting the requirements of the  
22 PNERP or the relevant provincial legislation to support  
23 the offsite authorities, and in this case AECL has.

24 Regarding the conformance of the  
25 municipalities to the provincial requirements, we

1 understand what they are, we understand what the status  
2 is, but we have no formal mechanism to take action upon  
3 that.

4 **THE CHAIRMAN:** EMO, you want to add  
5 something on this?

6 **MS. STUART:** Thank you. Allison Stuart,  
7 for the record.

8 A couple of points of clarification. One  
9 is there has not been a change to the public alerting  
10 requirements since 2001, so that's a decade.

11 And the other is while the local -- while  
12 AECL at the Chalk River site is in agreement with the  
13 legislation and supports it, the obligation is not with  
14 them -- it is in the actual plan -- the obligation lies  
15 with the municipalities; just as a point of clarification.

16 Thank you.

17 **MEMBER BARRIAULT:** Thank you.

18 Next question deals with the management  
19 system of AECL and if I can draw your attention to CNSC  
20 Slide 7, in your presentation.

21 We know that the management system was  
22 below expectation up to now, but we're looking at AECL is  
23 addressing these weaknesses and it says:

24 "The transition of an Integrated  
25 Management System full implementation





1 Monsieur Harvey?

2 **MEMBER HARVEY:** Merci, monsieur le  
3 president.

4 Just coming back to EMO. You mentioned  
5 that the requirements for the Municipal Emergency Response  
6 Plan has not changed since 2001. Am I right to say that?

7 **MS. STUART:** Allison Stuart, for the  
8 record.

9 While we have made changes within the  
10 Provincial Nuclear Emergency Response Plan, we have not  
11 made changes to the public alerting requirement since  
12 2001.

13 **MEMBER HARVEY:** Okay. What is the content  
14 of this Municipal Emergency Response Plan? What is the  
15 content; what do you have in that? And then what is  
16 needed? For example, here it has been -- the last one has  
17 been reviewed in 2007 and so what has to be changed in  
18 such plan?

19 **MS. STUART:** Allison Stuart, for the  
20 record.

21 Each of the affected municipalities looks  
22 at the Provincial Nuclear Emergency Response Plan and  
23 reflects how those requirements would be met at the local  
24 level; so can go through it and map against that  
25 provincial plan.

1                   Details around that are really the  
2                   responsibility of the municipalities and I know you'll  
3                   have an opportunity to talk with the municipal  
4                   representatives later.

5                   In terms of the theme headings, they would  
6                   include the scope of the plan, the data and organization,  
7                   notification, initial responses and operational responses,  
8                   and then there's a further breakdown under each of one  
9                   those headings. And this would be used by the community  
10                  as the implementing plan is reflective of their community.

11                  **MEMBER HARVEY:** And who is responsible of  
12                  that plan after that, when the plan has been established?  
13                  The mayor, the ---

14                  **MS. STUART:** Allison Stuart, for the  
15                  record.

16                  The responsibility for having a plan at the  
17                  local level -- at the municipal level, is the  
18                  responsibility of the municipality.

19                  **MEMBER HARVEY:** So we'll ask the same  
20                  question to the municipality later on, but I try to make a  
21                  link between the -- for example, you have within the AECL  
22                  the officer in charge and a senior emergency officer and  
23                  then you have to go to the mayor and then to the  
24                  provincial and to national.

25                  So just inside the AECL, what is the link

1           between the officer in charge and the senior emergency  
2           officer?

3                       **THE CHAIRMAN:** Can we -- if anybody from  
4           one of the municipalities that knows the answer to some of  
5           the questions we are posing here, can -- please feel free  
6           to join us right now, to come up front. You can jump the  
7           queue and then proceed to your presentation.

8                       **MEMBER HARVEY:** So in a few words my  
9           question is, if something happens, how does it work? I  
10          suppose the first one to be advised -- to do something,  
11          the senior emergency officer?

12                      **MR. LESCO:** Randy Lesco, for the record.  
13                      I'd ask Cathy Fisher to respond to your  
14          question.

15                      **MS. FISHER:** For the record, Cathy Fisher.  
16                      So during an emergency there are very clear  
17          frameworks for who has accountability for what areas.  
18                      So within the Chalk River at the building  
19          level, we have an officer in charge. This is the expert  
20          on understanding what hazards are within the building, who  
21          would be in the building. And when the first emergency  
22          response team shows up, they would be providing detailed  
23          information to them on things they would need to watch out  
24          for before entry and then that organization that shows up,  
25          as with the industry standards, there is an Incident

1 Commander at the scene. And the officer in charge works  
2 very closely with that Incident Commander.

3 That information is then fed back to the  
4 Senior Emergency Officer who is part of the Chalk River  
5 Emergency Operations Centre. That person makes decisions  
6 for deployment of emergency response across the site.  
7 That person supports the notification process to ensure  
8 that the municipality is notified immediately if there is  
9 an emergent or emergency situation as well as the  
10 Provincial Emergency Operations Centre as well as Sécurité  
11 Québec. They also have some additional -- excuse me,  
12 additional ones on the list, but those are the key  
13 players.

14 So from an authorization process at the  
15 building area, it is the Incident Commander getting  
16 information from our officers in charge. It is the Senior  
17 Emergency Officer providing information to the community.

18 **THE CHAIRMAN:** So maybe it's now time Mayor  
19 Thompson -- did I get -- is that Mayor Thompson in front  
20 of us or not?

21 **MAYOR THOMPSON:** You have both the Mayor of  
22 Laurentian Hills, Mayor Rabishaw, and myself, Mayor  
23 Thompson so we're happy to answer any questions. I did  
24 have another presentation as well so whatever you wish the  
25 order to be.

1                   **THE CHAIRMAN:** Thank you for being here and  
2 maybe to start just about what's your understanding about  
3 your role in the emergency? After Japan, as you know,  
4 everybody's preoccupied with emergency management and we  
5 want to know how it's working here in this community, so.

6                   **MAYOR RABISHAW:** Mayor Richard Rabishaw. I  
7 am the Chair for the Emergency Management for the town of  
8 Laurentian Hills and Deep River.

9                   The preparedness of us is as soon as an  
10 emergency happens through AECL, we are notified through  
11 myself, as a pager, then we assemble within our town  
12 office which is outside of the 9-mile or 9-kilometre  
13 emergency area which is at Point Alexander.

14                   There is a team that is assembled. There  
15 are probably 20 or 25 people and we then await for  
16 notification from AECL what the incident may be.

17                   And if that requires notification of our  
18 residents within that 9 kilometre then we have what you  
19 call a rapid response by a phone system that alerts people  
20 that there is an issue going on.

21                   We also now because of -- we're not quite  
22 ready with the sirens, we have the fire trucks that go out  
23 and also notify people that may be in an area that are not  
24 covered by the phone systems so forth.

25                   But we are at a situation now where we've

1 received our quotes back for our sirens. We are trying  
2 to, I guess, with the people that are doing the assessment  
3 looking at the best spots for these notifications which  
4 will also have back-up by battery so hopefully by 2012,  
5 these will be installed and our alerting system will be  
6 completed.

7 **THE CHAIRMAN:** Is the alerting system the  
8 only thing that makes you non-compliant with the  
9 provincial legislation?

10 **MAYOR RABISHAW:** My understanding it is the  
11 alerting system that we're at fault right now.

12 **THE CHAIRMAN:** What about the potassium  
13 iodine? Everybody knows who does what to whom and by  
14 when?

15 Can we start with AECL?

16 **MR. LESCO:** Randy Lesco, for the record.  
17 I'd ask Cathy Fisher to respond to your  
18 question.

19 **MS. FISHER:** Cathy Fisher, for the record.

20 So as a precautionary measure, Chalk River  
21 does procure and stock enough stable iodine tablets for  
22 the population of the primary zone. It is the Medical  
23 Officer of Health who actually directs the administration  
24 of the tablets and we would get that information through  
25 the Provincial Emergency Operations Centre.

1                   Chalk River has these tablets located at  
2 various locations so on site; we have them with our  
3 Radiation Assessment Team. We have them in our  
4 Decontamination Centre and we have them with our Health  
5 Centre.

6                   Off site, we have them with the Emergency  
7 Worker Centres. We have them with the Deep River-  
8 Laurentian Hills Fire Department, the hospital, the long-  
9 term care, the Ontario Provincial Police, the Canadian  
10 forces base in Petawawa Fire Department and with the  
11 Renfrew County Paramedic Service and currently, we  
12 stockpile 25,000 so we have more than enough for the  
13 primary zone and the community.

14                   **THE CHAIRMAN:** Just so I understand if I  
15 understood correctly, you have to -- AECL has to seek  
16 permission from health authority to distribute the  
17 potassium? I thought there was some, really, time limit  
18 here that -- I thought you had the authority to give  
19 within your own zone though -- to distribute those pills  
20 on your own. Did I get it right?

21                   **MS. FISHER:** So Cathy Fisher, for the  
22 record.

23                   Just to clarify, this is within Chalk  
24 River, we absolutely have the authority to issue  
25 potassiumiodine tablets to AECL workers, but we do not

1 have the authority to direct the ingestion of the tablets  
2 in the public.

3 **THE CHAIRMAN:** That has to come from the  
4 local health authority?

5 **MS. FISHER:** That is correct.

6 **THE CHAIRMAN:** Okay. Monsieur Harvey?  
7 Sorry, go ahead. You wanted to say  
8 something.

9 **MS. STUART:** Allison Stuart, for the  
10 record.

11 Just to clarify that the decision to  
12 provide potassiumiodine to the public is made by the Chief  
13 Medical Officer of Health for the province, not by the  
14 local Medical Officer of Health.

15 Further, there was an independent study  
16 done in 2004 with regards to Chalk River and the  
17 expectation even with the modelling they did of the most  
18 severe situation, did not contemplate potassiumiodine  
19 being required although quite happy to have it on -- you  
20 know, on deck should the situation change.

21 **THE CHAIRMAN:** Does the other mayor want to  
22 say anything about your plans? So I didn't catch who --  
23 is it Mayor Thompson we're talking to?

24 **MAYOR THOMPSON:** Mayor Thompson. And so I  
25 do have a more formal presentation as an intervenor that

1 I'm happy to share with you now or at your leisure, but  
2 Richard and I, we take this role pretty seriously. We're  
3 both newly elected members as mayors. Not everything is  
4 on the brochure when you become an elected official and  
5 our responsibilities in terms of nuclear safety are one  
6 that we are learning as well and we have hired a brand new  
7 coordinator of our committee and she is fantastic and so  
8 she works very closely with representatives from AECL and  
9 representatives from the Emergency Management Ontario and  
10 she is providing us with the guidance that we require to  
11 make sure that we follow all that is required of us.

12 **THE CHAIRMAN:** Look, since you're sitting  
13 already in front of us, why don't you make -- take your  
14 time to do the presentation?

15 **MAYOR THOMPSON:** Certainly.

16 **THE CHAIRMAN:** You know, as all  
17 intervenors, we allot about 10 minutes and then can open  
18 up for questions. So if you're ready, please proceed.

19

20 **11-H7.4**

21 **Oral Presentation by the**  
22 **Town of Deep River**

23

24 **MAYOR THOMPSON:** So on behalf of my  
25 colleague, I do thank you very much for the opportunity to



1 right -- you know we have Bob and Randy and Andrew and  
2 Joan and Steve and Colette and George and Dave and Cathy -  
3 - I trust these folks. I trust that they will do what is  
4 right for my community.

5           You've met Mr. Cox before, I'm sure. In  
6 the last few years, he of course had a lead role in  
7 ensuring the repair of the reactor.

8           Dave and I play hockey together. In fact,  
9 tonight's our first night and both of us look  
10 spectacularly out of shape. And Dave's wife, Linda,  
11 teaches in our school and, collectively, the two of them  
12 raise their children in our municipality.

13           That's what makes me feel safe at night.  
14 No sane person would ever purposely put their own family  
15 at risk, and so I know when I meet these people in the  
16 street and I engage them in conversation, I know that they  
17 have a safe operation and I trust them to do so.

18           In much the same way, the role that you  
19 play as a regulator gives me great comfort. Many of the  
20 CNSC members, a lot of your staff, in fact, have lived in  
21 our community. And I think they share the special  
22 affinity that we all have for it.

23           And so we fully understand our  
24 responsibility in terms of protecting the residents of our  
25 community, but of all the things that I need to worry

1 about, the safe operation of this reactor is not one of  
2 them, and so I fully support the application that is  
3 before you today and strongly encourage, on behalf of our  
4 residents and the 3,100 employees that live here in  
5 Renfrew County, that this application be renewed.

6 Thank you.

7 **THE CHAIRMAN:** Thank you.

8 Before -- Mr. Harvey, you're the first  
9 floor.

10 **MEMBER HARVEY:** I just want to -- in the  
11 Emergency Management Ontario presentation, you have  
12 touched the regular exercises and the type of exercises.  
13 And the last one -- last full-scale exercise was held in  
14 2007.

15 Could you just elaborate on what is a full-  
16 scale exercise and are you -- do you have the intention to  
17 have a full-scale exercise once you -- all the plans will  
18 be revised and -- in order to evaluate the readiness of  
19 the system?

20 Just I suppose a full-scale exercise will  
21 bring together all the people from the federal, provincial  
22 and local and whatever.

23 **MS. STUART:** Allison Stuart, for the  
24 record.

25 And in evidence of true collaboration,

1 we've agreed that I'll kick off the response and then turn  
2 it over to colleagues behind.

3 In terms of a full-scale exercise, that's  
4 an exercise where we include all levels of government.  
5 The provincial emergency operations centre would be fully  
6 operational. The Ministry -- sorry, the municipal  
7 emergency operation centre. The AECL would be fully  
8 activated.

9 We would also have our traffic control  
10 committee up and running, those sorts of things.

11 So it's not testing one component of the  
12 plan, it's a broader exercise that includes all aspects.  
13 And we do do regular, full-scale exercises which, as you  
14 can imagine, significant amount of work, on a rotation  
15 basis among the various sites.

16 And I'm not sure that we have at the  
17 provincial level a date in mind for the next exercise at  
18 Chalk River. No, I'm told we're not -- we don't have a  
19 date in mind.

20 So perhaps that gives you a bit of context  
21 for your question. Thank you.

22 **MEMBER HARVEY:** But in order to test the  
23 system, could municipalities just make a request to  
24 Emergency Management Ontario to have a full-scale  
25 exercise?

1                   **MS. STUART:** Allison Stuart, for the  
2 record.

3                   Yes. Certainly any municipality can make  
4 such a request. We would need to feed it into the system  
5 because we already have exercises lined up and being lined  
6 up.

7                   The preparation for any exercise takes 18  
8 months, so even if the request came today, we would be  
9 projecting out from probably 2 years plus.

10                  **MEMBER HARVEY:** How many locations you  
11 have? I mean, how many locations need to have such  
12 exercises? Because if you've got many -- too many  
13 locations, and this is to say that a place like here in  
14 Chalk River would -- could have one and be 20 years before  
15 it could have another one.

16                  **MS. STUART:** Allison Stuart, for the  
17 record.

18                  We do the -- we exercise the nuclear plans  
19 separate from our general exercising of emergency plans  
20 with municipalities. So the circle is a lot smaller for  
21 that, and we have a total of five sites that we rotate  
22 through.

23                  Clearly, there are some sites that are  
24 deemed to be at greater potential for a complicated,  
25 complex response than others, but we do rotate through

1           them all.

2                           **THE CHAIRMAN:** You know, I'm very surprised  
3           that you don't do more often exercise because I thought  
4           that CNSC insists that all our nuclear sites actually do  
5           exercise. Somebody correct me if I'm wrong on this, but  
6           we do at least a desktop simulation kind of on a very  
7           periodic basis.

8                           I don't know what the period is. I don't  
9           know how often we do it. But I thought those are done  
10          quite often.

11                          Staff?

12                          **MR. JAMMAL:** For the record, Ramzi Jammal.  
13                          I'd ask Luc Sigouin to come and give you  
14          the specific details.

15                          Mr. President, you are correct. There are  
16          multiple levels of exercises. There is the exercise on  
17          site itself as the licensee must conduct and then the  
18          exercises that will encompass the municipality and outside  
19          the facility itself.

20                          Mr. Sigouin will talk to you about the  
21          exercise with respect to the on-site and the desktop  
22          exercises, and I, personally, was involved in the 2007  
23          major integrated exercise of the facility in 2007 that  
24          encompassed all of the municipalities, federal and the  
25          provincial.

1                   **MR. SIGOUIN:** Luc Sigouin.

2                   So there's a couple of aspects to the  
3 question, licensee and also off site, so I'll talk about -  
4 - a little bit about our involvement in the off-site  
5 exercises and I'll ask Mike Callighen to talk about the  
6 licensee-specific ones.

7                   So Mr. Jammal touched on the 2007 -- CNSC's  
8 participation in the 2007 full-scale provincial exercise.

9                   CNSC participates as a player, but also  
10 does verification on all the CRL exercises, and those are  
11 typically held on an annual basis where they'll have some  
12 type of emergency exercise on the site. And I'm sure AECL  
13 can talk about that.

14                   When we do those exercises, those  
15 verifications, Emergency Management Ontario is often part  
16 of that process. Though they don't play in the full-scale  
17 fashion, the interactions and communication systems are  
18 tested.

19                   I'll let Mr. Michael Callighen talk about  
20 the requirements for the on-site exercises.

21                   **MR. CALLIGHEN:** Hello. Mike Callighen, for  
22 the record.

23                   Yes, the -- what we evaluate are the  
24 licensee's emergency plans and programs. And from the  
25 regulations, they're required to cooperate and assist the

1 municipalities and the province in their off-site  
2 exercises.

3 So it's quite often that they don't  
4 coincide, so the expectation is that when a province holds  
5 a major exercise, the licensee will contribute and  
6 cooperate.

7 The last one where that happened was in  
8 2007, and normally that involves the licensee providing  
9 staff to the off-site centres to staff and do their off-  
10 site work.

11 I'll leave it at that for now.

12 **THE CHAIRMAN:** Thank you. Monsieur Harvey?

13 **MEMBER HARVEY:** Just maybe turn to Mr.  
14 Thompson to -- because I was just asking if the -- he  
15 would be prepared to -- for such exercise or at least if  
16 such exercise can reassure them that all the systems will  
17 work, if necessary?

18 **MAYOR THOMPSON:** I can tell you that in the  
19 few months that we have been in office we have done a  
20 desktop exercise, it was primarily done to test our phone  
21 alerting system and it was an exercise that certainly  
22 provided us with a lot of information into how we would  
23 respond better in a real situation.

24 I know there are peculiarities with a  
25 nuclear emergency, but as a municipality of course, we

1 undertake emergency exercises all the time. We did one  
2 just last week, an exercise that involved an oil tanker  
3 and a school bus.

4 And so, it was an opportunity for our local  
5 fire department and our police department, our paramedic  
6 department and our hospital to work collectively on an  
7 emergency exercise.

8 And so although not nuclear specific, it  
9 certainly is an indication that we do take these  
10 activities seriously and we would actively encourage my  
11 colleague in front of me to go ahead and let's get a full  
12 exercise scheduled. If it takes 18 months then perhaps we  
13 can consider this date day one and we'll make that request  
14 formally now.

15 **MEMBER HARVEY:** Thank you.

16 **THE CHAIRMAN:** Thank you. Dr. McDill, you  
17 have a question?

18 **MEMBER MCDILL:** Thank you. My question is  
19 to both mayors, also incorporating the written submission  
20 of National research council which is 817.6 and NRCan who  
21 are still here. At this point, isotope production will  
22 cease in 2016, about that same time that the full  
23 implementation of the integrated management system will be  
24 onboard.

25 Twenty fourteen (2014) the government will

1 announce it's plans, I guess, with respect to the reactor  
2 and at that time, National research council will maybe  
3 know whether or not the reactor will continue as a  
4 research reactor for fundamental research. So how do the  
5 mayors deal with this? You've got --2016 is very close,  
6 2014 is even closer and you have a community full of  
7 scientists and researchers and all of the other people who  
8 make up the community.

9 **MR. CALLIGHEN:** Well, I mean, naturally  
10 this is an area of great concern. Again, I'm not a  
11 researcher and I'm not a scientist, but when I talk to my  
12 colleagues and I ask them can this reactor safely operate  
13 past 2016, the universal answer I get is yes, it can.

14 And so that will be a decision point that  
15 we'll have to come to. I hope to see most of you here in  
16 another five years and we can have another licensing  
17 hearing for an extended period of time.

18 It is -- from an economic standpoint,  
19 having the operation of a research reactor is vital. Not  
20 just vital to Renfrew county but, I think, vital to all  
21 Canadians. The research that's been conducted in this  
22 very small community has had a positive effect on the  
23 entire world and this is something that we are very, very  
24 proud of.

25 And, the 3,100 folks that go to work there

1 every day, I think, are proud of their accomplishments as  
2 well and I think it would be a tragic error if our  
3 government and Canadians did not support this industry as  
4 we move forward past 2016.

5 **MEMBER McDILL:** Does NRCan want to add  
6 anything? No?

7 Thank you, Mr. Chair.

8 **THE CHAIRMAN:** Okay. I think -- after the  
9 mayors?

10 **MEMBER TOLGYESI:** Yes.

11 **THE CHAIRMAN:** Go ahead.

12 **MEMBER TOLGYESI:** In fact, I have a  
13 question to mayors and I have also to EMO.

14 First, maybe, to Emergency Management  
15 Ontario my understanding is that there is no authority  
16 relation between Emergency Management Ontario and  
17 municipalities. There is no regulations, no legislation.  
18 Am I right, when I'm saying that, or it's right, my  
19 understanding?

20 **MS. STUART:** Allison Stuart, for the  
21 record.

22 The legislation that I referenced earlier  
23 requires the province to have a plan, and within that  
24 legislation and within that plan it requires affected  
25 municipalities to have appropriate plans.

1                   What is not in the -- in either the plans  
2                   or the legislation is what steps can be taken to oblige a  
3                   community to have a plan or another ministry to have a  
4                   plan. That's not covered in the legislation.

5                   **MEMBER TOLGYESI:** Because, saying that, I  
6                   don't know how the Ontario Government and the public will  
7                   react in case of severe accident, you know, where  
8                   Emergency Management Ontario will be involved and how far  
9                   you will talk about your responsibilities and those of the  
10                  municipalities if there is no direct relation, authority  
11                  relation.

12                  I think that public perception will be not  
13                  necessarily so favourable in that.

14                  **MS. STUART:** Allison Stuart, for the  
15                  record. The legislation does indicate and does outline  
16                  that should there be a nuclear event of any sort, that the  
17                  Province will take mastery of that event. It works very  
18                  closely, obviously, with the relevant municipalities, the  
19                  facility itself, et cetera.

20                  To this point in time, the level of  
21                  cooperation and coordination among all the parties is very  
22                  high, very positive. We meet formally on a quarterly  
23                  basis each year. We meet informally every couple of  
24                  weeks; we're talking with one or other of the sites to  
25                  further the agenda as ensuring that we have overall

1 compliance.

2 In addition to how the response is  
3 undertaken, the -- while we coordinate, certainly, the  
4 response, we have technical expertise to avail -- to us  
5 available at the provincial level to determine what that  
6 appropriate response would be, and then the -- at the  
7 local level, whether it's the municipality or the facility  
8 itself will ensure that the measures are followed through  
9 on.

10 **MEMBER TOLGYESI:** I suppose when you are  
11 talking about communications relations with municipalities  
12 and the sites, you include also Nuclear Safety Commission.

13 **MS. STUART:** Allison Stuart, for the  
14 record. My apologies, we certainly do.

15 **MEMBER TOLGYESI:** Thank you.

16 I have a question for both mayors. I am  
17 sorry because your presentation is coming before another  
18 one and my question was directed, you know, according to  
19 following that presentation.

20 But according to the survey by Paperback  
21 Consultants in the vicinity of the NRU there is a low  
22 awareness and knowledge of NRU and the nuclear energy in  
23 general, and more specifically, only 28 percent of youth  
24 is aware of community emergency plan.

25 That means 28 percent and maybe it's --

1 maybe, 25 percent is one of four knows what is that. And  
2 could you comment on this and what you expect -- what  
3 actions you expect you will take to increase this  
4 awareness?

5 **MAYOR THOMPSON:** Thank you for your  
6 question.

7 Obviously not having seen this survey, I  
8 don't know who was surveyed and what the precise questions  
9 that were asked. I think our public interaction with  
10 youth has diminished, probably significantly, since 9/11.

11 What happened before, of course, we had a  
12 very active public information centre at the Chalk River  
13 site and I can tell you as a student growing up here,  
14 every student was afforded the opportunity to go through  
15 that information centre and to learn firsthand, in a very  
16 tangible way, exactly what was happening on the site.

17 And it's unfortunate now, with the  
18 different security restrictions, that that is diminished.  
19 That being the case then it's more incumbent upon AECL,  
20 community leaders, and our educators to maybe spend some  
21 more time on it.

22 So what you're asking of us is -- would  
23 have to have a joint responsibility that would include our  
24 schoolboards and our teachers as well.

25 So I'm sorry that the number is as low as

1           it is. I find that a little bit surprising and something  
2           that we need to be aware of and to take action on.

3                       **MEMBER TOLGYESI:** And do you have any  
4           comments, AECL?

5                       **MR. WALKER:** Bob Walker, for the record.

6                       We have been proactive in the last number  
7           of years to increase our dissemination of knowledge and to  
8           engage the communities through instruments such as our  
9           environmental stewardship council on raising awareness and  
10          being engaged in the concerns on our community.

11                      I think there's a core message in the  
12          survey, is that we can do more to partner with the local  
13          institutions that are in the business of education, with  
14          our school boards, with our emergency response community  
15          within the local area, and use those as instruments where  
16          we share in the communication of information.

17                      So I have welcomed the survey. I think  
18          it's provided us interesting perspectives of how we can  
19          improve and, to me, the key message is one of  
20          strengthening our partnerships in co-education on the  
21          issues.

22                      **THE CHAIRMAN:** I think I have lots more  
23          questions that talk about the survey and it's unfortunate  
24          we didn't get the survey presented, so that's going to be  
25          after lunch.

1                   You have another comment you want to make?

2                   **MAYOR RABISHAW:** It's Richard Rabishaw.

3                   One comment on communication. What we have  
4                   decided to do with our two municipalities is now come up  
5                   with a newsletter that is almost completed to inform all  
6                   of our local communities of what's going on with the  
7                   emergency preparedness group that we have, and to make  
8                   them aware of what is going to -- what they must do, what  
9                   is happening, and how to proceed.

10                   So that communication is almost ready to be  
11                   let out, and we will be doing it through our municipality  
12                   there shortly.

13                   **THE CHAIRMAN:** By newspaper, you're talking  
14                   about a paper format, where all the kids nowadays don't  
15                   read paper?

16                   **MAYOR RABISHAW:** A paper format and a  
17                   communication as well as possible with -- through the  
18                   members of the media. Thank you.

19                   **THE CHAIRMAN:** Thank you.

20                   Okay, we have to move on to the next  
21                   intervenor, so thank you, Your Honours, for being here and  
22                   making this presentation.

23                   And there was a switch in order here, and I  
24                   understand that Nordion will be the next presenter, and  
25                   Ms. Tamra Benjamin will make the presentation as outlined

1 in CMD 11-H7.3 and CMD 11-H7.3A.

2  
3 **11-H7.3 / 11-H7.3A**

4 **Oral Presentation by**

5 **Nordion**

6  
7 **MS. BENJAMIN:** Mr. President and Members of  
8 the Commission, my name is Tamra Benjamin. I'm the vice  
9 president of public and government relations at Nordion.

10 Nordion is appearing before the Commission  
11 to fully support the application of Atomic Energy of  
12 Canada Limited, AECL, for the renewal of the Chalk River  
13 Laboratories, CRL, site operating licence for the  
14 requested five-year term to 2016.

15 In doing so, we would like to emphasize the  
16 following three points.

17 One, our support for the licensing work of  
18 the Commission, the CNSC staff and AECL, in reviewing and  
19 approving the application, while ensuring the safety of  
20 the public, workers, and environment, as well as the  
21 ongoing quality and operational reliability of the  
22 facilities.

23 Two, the importance of a licence renewal to  
24 enable the continued operation of the CRL site and the NRU  
25 facilities, given the important role Canada continues to

1 play in assuring global medical isotope supply.

2 And, three, the continued reliance on NRU  
3 and related facilities on the CRL site for isotope  
4 production during the new five-year licence renewal  
5 period.

6 We have come before the Commission on  
7 several occasions in the past to convey the important role  
8 that Canada plays in supplying the world with medical  
9 isotopes. This critical role will continue throughout the  
10 licence renewal period.

11 It is the view of Nordion, our customers,  
12 and the nuclear medicine community, that Canada's isotope  
13 supply will continue to be essential to the provision of  
14 health care for patients who are beneficiaries of medical  
15 isotopes globally.

16 Today, the NRU facilities play a vital role  
17 in producing raw isotopes for Nordion. We then further  
18 purify these raw isotopes and distribute them worldwide to  
19 our customers, the radiopharmaceutical manufacturing  
20 companies. These customer then in turn undertake further  
21 processing of the isotopes and distribute the final  
22 radiopharmaceutical products to many thousands of  
23 hospitals and clinics worldwide.

24 Canada continues to be one of the world  
25 leaders in the production and distribution of medical

1 isotopes vital for global health care. The CRL site and  
2 NRU facilities are key components of this leading role.

3 NRU produces a number of important isotopes  
4 for physicians and patients. Molybdenum-99, commonly  
5 known as Moly-99, is the world's most important and widely  
6 used medical isotope. Eight out of ten nuclear medicine  
7 procedures depend on this isotope. It is particularly  
8 significant in diagnosing cancer and heart conditions.

9 Other isotopes produced on the CRL site  
10 include Iodine-131, used for a variety of treatment  
11 applications including thyroid cancer therapy and  
12 diagnostic imaging; Iodine-125, used for treating prostate  
13 cancer; and xenon-133, used for lung ventilation studies.

14 Canada's role as a leader in medical  
15 isotope supply has fostered an innovative industry that  
16 creates high-value Canadian jobs. As Canada strives to  
17 maintain a leadership position in science and technology,  
18 continued reliable supply of medical isotopes will  
19 facilitate the advancement of new nuclear medicine  
20 technologies in the future.

21 Medical isotopes are the foundation to  
22 advance research for improved drug discovery and  
23 development. They are a pathway to personalized medicine,  
24 enabling health care professionals to improve lives  
25 through targeted imaging and targeted therapy, thereby

1 improving medical diagnoses and treatment specific to the  
2 individual. To advance health care technology for  
3 Canadians, we need continued isotope supply from the CRL  
4 site.

5 As we have observed during two recent,  
6 unplanned, extended outages of the NRU facilities, Canada  
7 continues to play a key role in ensuring sufficient global  
8 supplies of medical isotopes. During both the December  
9 2007 and May 2009 outages, there were global shortages of  
10 medical isotopes. While the role of the NRU facilities in  
11 the global supply system has decreased in recent years, it  
12 continues to provide key supply that cannot be fully  
13 replaced by other producers.

14 While there are projects underway to  
15 provide new sources of supply, these projects are not  
16 expected to be brought to market before the end of the  
17 current NRU licence renewal period of five years. As  
18 such, the continued operation of the CRL site and the new  
19 facilities will be important for ensuring global isotope  
20 supply.

21 NRU, which continues to play a role in  
22 supplying medical isotopes to date, has been in operation  
23 for over 50 years. We are pleased that AECL continues to  
24 invest in safety system upgrades, plant life extension  
25 programs, and performance improvement initiatives for the

1 CRL site.

2 In particular, we are pleased and  
3 supportive of the project new lease, nuclear legacy  
4 liabilities program, and the isotope supply reliability  
5 program, that were described to the Commission by AECL at  
6 the Day One hearing in June 2011.

7 We support AECL's continued improvements  
8 related to the management of waste from isotope production  
9 operations and their continued investments in  
10 infrastructure, such as personnel, new processes, and  
11 equipment.

12 We also commend AECL on securing in January  
13 2011 full membership to the World Association of Nuclear  
14 Operators, which shows their commitment to continuously  
15 improving operations and a safety culture on the CRL site.  
16 Nordion supports the focus on safety that is demonstrated  
17 by AECL.

18 Operation of the CRL site is vital to  
19 support Canada's role as an essential link in the global  
20 isotope supply chain. The NRU reactor continues to play a  
21 key role in producing medical isotopes.

22 In recent years, we have observed the  
23 impacts of the NRU facilities being unavailable to the  
24 global supply chain, when global shortages have occurred.  
25 These global shortages underscore the importance of the

1 current licence renewal. This renewal will ensure  
2 Canada's place as a global producer of medical isotopes  
3 throughout the licence renewal period.

4 Nordion expects that AECL, as a licensed  
5 operator of the CRL site and NRU facilities, will operate  
6 these facilities with paramount consideration for safety  
7 and reliability. Safety, quality, and reliability of  
8 operation will continue to enable Canada to remain as a  
9 premier supplier of medical isotopes for the Canadian and  
10 international healthcare communities.

11 To ensure the global nuclear medicine  
12 community of a reliable supply of medical isotopes it is  
13 important to approve the licence renewal of the Chalk  
14 River Laboratory site.

15 Again, Nordion supports AECL's request for  
16 the Commission to renew the Chalk River Nuclear Laboratory  
17 site operating licence for a 60-month period to 2016.

18 Thank you.

19 **MR. CHAIRMAN:** Thank you. Questions?

20 **MEMBER HARVEY:** Yes, Monsieur.

21 **MR. CHAIRMAN:** Mr. Harvey?

22 **MEMBER HARVEY:** Maybe one question -- when  
23 in your presentation, Ms. Benjamin, you mentioned the  
24 global supply from NRU has been reduced. To what extent  
25 and what is the cause of that? Is this a voluntary

1 reduction or the capacity of the NRU, Ms. Benjamin?

2 **MS. BENJAMIN:** Tamra Benjamin, for the  
3 record.

4 Actually, since the last unplanned NRU  
5 outage of 2009-2010, the Moly-99 and medical isotope  
6 market has really changed quite significantly, both from  
7 an economic and a competitive landscape.

8 During that time period hospitals and  
9 physicians came to look at working with their products  
10 more efficiently and putting in processes that could  
11 better accommodate for shortages. So a lot of these types  
12 of implementations stayed on once the NRU reactor came  
13 back up. So it's not a situation of NRU's capacity, it's  
14 actually changes in the actual marketplace.

15 **MR. CHAIRMAN:** You mean some good things  
16 came out of the shutdown?

17 **MS. BENJAMIN:** Actually, you could say,  
18 yes, there probably were some good things that came out of  
19 the shutdown.

20 **MR. CHAIRMAN:** Monsieur Harvey?

21 **MEMBER HARVEY:** Another question.

22 In your submission -- just a moment.

23 **MR. CHAIRMAN:** While he's finding the  
24 question, anybody else?

25 **MEMBER HARVEY:** Too much paper.

1                   **MR. CHAIRMAN:** No?

2                   **MEMBER HARVEY:** You -- on page 2 of your  
3 submission in the second paragraph under, "Canada's  
4 continued importance in global isotope supply," you say  
5 while:

6                                 "There are projects underway to  
7 provide new sources of supply. These  
8 projects are not expected to be  
9 brought to the market before the end  
10 of the current NRU licence renewal  
11 period for five years."

12                   What are you expecting from those projects?

13                   **MS. BENJAMIN:** Tamra Benjamin, for the  
14 record.

15                                 The projects here there are a lot of  
16 organizations and companies that are looking at incurring  
17 domestic supply for medical isotopes. Some of these are  
18 studies that are still in a feasibility study, which means  
19 just at a research level; they have to actually be proven  
20 before medical isotopes can be produced. Some of them are  
21 actually in a level of actual research and development.

22                                 But as you know, nuclear is not a simple  
23 business, it's actually quite complex and these kind of  
24 projects, to bring them to fruition where they are  
25 actually providing commercial isotopes that pass

1 regulatory requirements and have the processing facilities  
2 take quite a bit of time. So although there are many  
3 projects out there that are working towards producing  
4 isotopes in different ways, using different technologies,  
5 it will be some time before they actually come to  
6 fruition.

7 **MEMBER HARVEY:** Thank you. I will just  
8 maybe ask AECL to comment about that, if that -- those  
9 projects are some kind of an attack to your production and  
10 that would, well, reduce the demand for you and then if  
11 there is many projects that show success, that then NRU  
12 would be in a way -- we'd say out of business, but ---

13 **MR. WALKER:** Bob Walker, for the record.

14 A number of comments that I can make in  
15 response to the Commissioner's question.

16 First is, we provide isotopes to the world  
17 as a result of government policy and it is the government  
18 that subsidizes us to enable us to provide that. So the  
19 notion of us continuing to supply into the market is an  
20 element of government policy.

21 In the context of moving forward, we are  
22 not engaged in the projects that are looking at  
23 alternative technologies or supply.

24 Finally, I'd highlight that the NRU has  
25 three missions, the isotope production being but one. As

1 has been intimated by Mayor Thompson, the NRU is a source  
2 of neutrons for science as well as being the instrument  
3 for the development and testing of fuel technologies for  
4 the CANDU fleet, existing fleets and new designs. So with  
5 the forecast end of one mission there remains two, and the  
6 arguments that will be examined in the coming years around  
7 the future of the NRU will tie to both a question of  
8 mission and a question of serviceability for that mission.  
9 Thank you.

10 **MEMBER HARVEY:** Merci.

11 **MR. CHAIRMAN:** So let me just ask Nordion.  
12 So you -- if I understood what you were saying, you don't  
13 believe that those technologies will be enough to  
14 substitute for the NRU shutdown in 2016, if they stop  
15 isotope production. So what is Nordion going to do, or  
16 are you starting to prepare for such situations?

17 **MS. BENJAMIN:** Tamra Benjamin, for the  
18 record.

19 Well, right now we're extremely focused on  
20 relicensing to 2016, and that's what we're really focused  
21 on. We have full confidence, of course, in AECL and their  
22 capabilities. We certainly look forward to working with  
23 AECL and CNSC in providing our customers, and their  
24 physicians and patients, with a reliable and safe supply  
25 of medical isotopes.

1                   It's early to say what's going to happen  
2                   after post-2016. Like we heard from NRCan, it's going to  
3                   take them two years to just determine what the  
4                   restructuring is going to be like for AECL, and what it's  
5                   going to be doing in the future, and I know AECL's also  
6                   working on their plans for what that restructuring's going  
7                   to look like.

8                   So it would be a little too early for me to  
9                   speculate on what's going to happen after post-2016. What  
10                  I can say though, is that Nordion continues to look at  
11                  opportunities for long-term medical isotope supply.

12                  **MR. CHAIRMAN:** Without pushing you any  
13                  further, are you any closer to resolving your legal  
14                  situation?

15                  **MS. BENJAMIN:** As you are aware, we are in  
16                  a confidential arbitration process. The proceedings are  
17                  moving along, we're hoping that the proceedings will  
18                  conclude at the end of the calendar year 2011, and  
19                  hopefully a decision will follow thereafter.

20                  **MR. CHAIRMAN:** Thank you.

21                  Anybody else?

22                  I think it's a perfect time to break for  
23                  lunch. We will reconvene at 1:30. Thank you.

24  
25                  --- Upon recessing at 12:33 p.m.

1 --- Upon resuming at 1:28 p.m.

2

3 **MR. CHAIRMAN:** Okay, good afternoon  
4 everybody.

5 We will now proceed to a presentation by  
6 Mr. Eric Campbell as outlined in CMD 11-H7.8 and 7.8A.  
7 Mr. Campbell, the floor is yours.

8

9 **11-H7.8 / 11-H7.8A**

10 **Oral presentation by**

11 **Eric Campbell**

12

13 **MR. CAMPBELL:** Thank you, Mr. President,  
14 Members of the Commission, ladies and gentlemen.

15 My name is Eric Campbell. I received  
16 funding through the CNSC's participant funding program in  
17 order to measure awareness and attitudes among youth  
18 living in communities surrounding Chalk River Laboratories  
19 and hosting Chalk River Laboratories.

20 The premise for this research -- the first  
21 premise is that nuclear facilities should be hosted by  
22 informed and willing communities. I believe this echoes  
23 the prevailing wisdom amongst nuclear stakeholders at the  
24 moment.

25 My research attempts to measure the

1 informingness(sic) and willingness of the youth segment,  
2 in particular, of the communities hosting Chalk River  
3 Laboratories.

4 The second premise is that youth form an  
5 important and often under-represented segment of these  
6 communities. Their awareness and attitudes, as well as  
7 presenting a litmus test for the community as a whole, are  
8 an indication, if nothing else, other than future  
9 attitudes towards Chalk River Laboratories since these are  
10 the future leaders of the community.

11 The methods used to conduct this research.  
12 A survey was designed and implemented on June 16<sup>th</sup> and 17<sup>th</sup>  
13 of this year with the help of two partner high schools,  
14 MacKenzie High School situated in Deep River and the next-  
15 nearest public high school, General Panet in Petawawa.

16 The survey was distributed to 195 youth,  
17 from whom I received 193 completed surveys. The youth  
18 surveyed were aged between 14 and 19. Here you can see  
19 the age distribution of the respondents, largely falling  
20 within the 15 to 17-year age group.

21 And here you can see the geographic reach  
22 of this survey, with the majority of respondents coming  
23 from Deep River, Chalk River and Petawawa.

24 A word of apology. There are animations in  
25 my presentation, so the paper copies of the presentation

1 will not display all the information that the screen does.

2 I'd like now to draw your attention to some  
3 highlights from the survey. Some of the findings stand  
4 out of their own accord. I'm also able, by crossing  
5 various findings together, to identify a few noteworthy  
6 trends and correlations.

7 The first finding from the survey, where  
8 are youth learning about nuclear? Where is nuclear  
9 education happening? Here is a bar graph showing how  
10 various students identified with various sources.

11 What does this tell us? First of all, it  
12 tells us that there is substantive education happening in  
13 schools. The scope is wide, but the depth we can't be  
14 entirely sure of.

15 The second thing it tell us is that the  
16 internet is not a primary site for our education, with  
17 only about a quarter of respondents saying that they have  
18 learned something about nuclear on the internet in the  
19 past.

20 And the third thing it tells us is that 8.3  
21 percent are not exposed to any education on nuclear at  
22 all.

23 As a layperson looking at this, I see it as  
24 perhaps a positive sign that there is a good foundation  
25 upon which to build in terms of education and outreach.

1                   Questions 2 through 5 of the survey were  
2                   designed to measure awareness and understanding of nuclear  
3                   energy in general. Adding the cumulative correct answers  
4                   and subtracting the cumulative incorrect ones from these  
5                   questions, we come to an average score for the  
6                   respondents, in this case, 48.2 percent. Not a high  
7                   score.

8                   Here are a couple findings that stand out.  
9                   First, that fewer than half of respondents recognize that  
10                  exposure to radiation is safe at controlled levels. On  
11                  the other hand, 36.8 percent believe that exposure to  
12                  radiation is always dangerous.

13                  Also, that 35.2 percent of respondents  
14                  believe that nuclear technology is used for making  
15                  microwave ovens.

16                  These extractions are reflective of the  
17                  findings of this section as a whole, which shows  
18                  significant confusion among respondents with respect to  
19                  nuclear energy.

20                  I also wanted to get an idea of general  
21                  attitudes toward nuclear energy. The survey asked  
22                  respondents to indicate on a scale from 0 to 10 how  
23                  concerned they are about the safety risks associated with  
24                  nuclear energy. The average ranking, 4.6, showing a  
25                  moderate level of concern.

1                   One interesting correlation to highlight  
2 here, youth who disclose having the lowest level of  
3 concern have the highest nuclear awareness score.

4                   Questions 7 through 9 measured awareness of  
5 Chalk River Laboratories in particular, of what happens  
6 there, its history of accidents and its current status.  
7 The average score among respondents, 42.3 percent, again a  
8 failing grade by academic standards.

9                   Here again are a couple of findings that  
10 stand out.

11                   Almost one-half of respondents incorrectly  
12 believe that electricity is generated at Chalk River  
13 Laboratories, and barely one-half of respondents are aware  
14 that there is nuclear waste storage at Chalk River  
15 Laboratories.

16                   And an important correlation, one we might  
17 expect, that youth who live nearer to Chalk River  
18 Laboratories have higher awareness, so there is a positive  
19 correlation between proximity to Chalk River Laboratories  
20 and awareness of Chalk River Laboratories. This would be  
21 expected, given the presence of Chalk River Laboratories  
22 and of AECL in the community, in Deep River and Chalk  
23 River in particular.

24                   But it's worth pointing out that those with  
25 the highest score, those that live nearer to -- nearest to

1 Chalk River are still only barely getting a passing score  
2 in terms of awareness of Chalk River Laboratories, with  
3 52.5 percent.

4 The survey also measured attitudes towards  
5 Chalk River Laboratories in particular, asking students to  
6 indicate how safe they feel living near Chalk River  
7 Laboratories. The average ranking, 7.5 -- 7.3, rather,  
8 showing that young people feel categorically safe living  
9 near Chalk River Laboratories.

10 This finding should be considered, of  
11 course, in the context of a low awareness of what happens  
12 at Chalk River Laboratories.

13 And a potentially telling correlation,  
14 respondents who report feeling unsafe living near Chalk  
15 River Laboratories are more than four times more likely to  
16 believe that nuclear weapons are being built at Chalk  
17 River Laboratories.

18 Respondents were queried about their  
19 awareness of emergency procedures for their community  
20 should there be an emergency at Chalk River Laboratories.  
21 The overwhelming majority are unaware of community  
22 emergency procedures.

23 So the overarching finding of this research  
24 is that the youth segment of the communities in which  
25 Chalk River Laboratories is situated are uninformed and

1           only partially willing.

2                       So there is a need and there is a window of  
3           opportunity for better education and outreach by AECL and  
4           by other nuclear stakeholders in the community.

5                       And if we want to know how youth feel about  
6           becoming more informed and having access to better  
7           education, we need to look no further; 59.3 percent of  
8           respondents declared that they don't know enough about  
9           nuclear energy.

10                      And the more striking figure that even more  
11           than that, 64.8 percent, so even several of those who felt  
12           they didn't know enough about nuclear, want to know more.

13                      And so based on this research, I  
14           respectfully recommend to the Commission that it makes  
15           coordinated outreach and education with measurable results  
16           an explicit target for itself as well as an explicit  
17           requirement for prospective licensees going forward, such  
18           that communities hosting nuclear facilities, like Chalk  
19           River and Deep River, are consistently and dependably  
20           informed and willing.

21                      For a list of detailed recommendations  
22           about where this improved outreach and education should be  
23           focused, you can consult to my final report.

24                      Thank you.

25                      **THE CHAIRMAN:** Thank you.

1 Questions? Dr. Barriault.

2 **MEMBER BARRIAULT:** Thank you, Mr. Chairman.  
3 Very interesting data, by the way. Thank  
4 you so much.

5 Did you discriminate male/female, or did  
6 you just take it by age?

7 **MR. CAMPBELL:** I just did it by age. I  
8 didn't discriminate between male and female.

9 **MEMBER BARRIAULT:** Okay. Thank you.

10 **MR. CAMPBELL:** I'm sure the -- because it  
11 was a random distribution, I would expect that the  
12 distribution in terms of gender reached the gender divides  
13 of the schools, which are roughly 50/50.

14 **MEMBER BARRIAULT:** Thank you.

15 **THE CHAIRMAN:** Dr. McDill?

16 **MEMBER McDILL:** Thank you. A couple of  
17 questions.

18 How did you distribute 100 and -- through  
19 the schools randomly? Is that what I understood?

20 And so the science teachers did it?

21 **MR. CAMPBELL:** Thank you for the question.

22 Yeah, it worked differently with the two  
23 partner high schools.

24 With MacKenzie High School, I was permitted  
25 into the school and to distribute the survey myself

1 through the help of not just science teachers, of various  
2 teachers. I didn't -- one thing I wanted to make sure was  
3 that I didn't -- was not just reaching science students,  
4 although I certainly reached a number of science students.

5 And, meanwhile, through General Panet in  
6 Petawawa, I had -- in that case, I was not allowed into  
7 the classroom to distribute the survey, and it was the  
8 principal and other administration that distributed the  
9 survey for me.

10 **MEMBER MCDILL:** So potentially your results  
11 could be skewed by what happened in the distribution  
12 process? I'm not suggesting they are. I'm just saying  
13 potentially they could.

14 **MR. CAMPBELL:** Thank you. Yes, certainly  
15 there were a couple of hours of at General Panet when the  
16 surveys were out of my eyesight and I was unable to  
17 control how they were distributed.

18 **MEMBER MCDILL:** Sometimes, just a little  
19 bit of mischievous force in the youth population who might  
20 choose to deliberately skew the results.

21 So were there any statistical questions  
22 done which you could eliminate such skewing?

23 **MR. CAMPBELL:** Well, certainly the survey  
24 began by asking for personal information including name,  
25 age, where you live -- or sorry, what -- a question

1 particular in order to ascertain geography was city or  
2 town that you live in or nearest to.

3 And definitely because I had 193 completed  
4 surveys, I was -- it wasn't just a matter of taking the  
5 data and inputting it. I went through all the data myself  
6 and was able to pinpoint if there were any irregularities.  
7 My impression was that there was not. Too many of the  
8 answers seemed too honest especially once we reached the  
9 end of the survey.

10 **MEMBER McDILL:** So did you postulate error  
11 bars on these things?

12 **MR. CAMPBELL:** Sorry?

13 **MEMBER McDILL:** Would you postulate the  
14 size of your error bars, 59.3 plus or minus 10 percent,  
15 plus or minus 2 percent?

16 **MR. CAMPBELL:** I haven't done that because  
17 of, first, the size of the survey which is limited as is  
18 the size of the population that I had to choose from or  
19 that I had the opportunity to distribute to. There are  
20 obviously a lot of areas -- this is not the most technical  
21 survey; it's not the most methodological or scientific  
22 survey methodologically. So there are a lot of grey  
23 areas. What I was hoping to get in the findings was a  
24 general idea of where awareness and attitudes were at.

25 **MEMBER McDILL:** And staff, what about the

1 recommendation?

2 **MR. JAMMAL:** Ramzi Jammal, for the record.

3 The recommendation: We welcome the  
4 recommendation with respect to the outreach and the CNSC  
5 and as part of our continuous improvement, the Licensees  
6 Program with respect to outreach because it's going to  
7 require CNSC, itself -- the licensee themselves -- the  
8 Outreach Program now is a -- I won't call it a safety-  
9 criteria area, but is a program that is systematically and  
10 formally being reviewed by CNSC staff and we are making  
11 recommendations with respect to that program through our  
12 communication division in order to -- is it adequate or  
13 not adequate improvement. But of course it's valuable  
14 information that we should go out, do more work,  
15 especially with the upcoming students, our public, because  
16 we report to the public and that's an indication that we  
17 have a lot more work to do.

18 **MEMBER MCDILL:** Thank you. And what about  
19 AECL?

20 **MR. WALKER:** Bob Walker, for the record.

21 As I stated early this morning, we welcome  
22 the survey and as I indicated at the time, we think the  
23 key message here is the importance of AECL achieving  
24 effective partnerships with those that are in the day-to-  
25 day business of education, particularly with the schooling

1 system. Of course, the challenge of having a requirement  
2 on us to move forward is one of also finding ways to have  
3 the other part of the partnership effectively engaged in  
4 the delivery so that it would be a bit of a challenge for  
5 us to address uniquely, but we do have a positive working  
6 relationship with the School Board of Renfrew County with  
7 the municipality so I have every confidence that we could  
8 move forward to improve that partnership.

9 **MEMBER McDILL:** Thank you, Mr. Chair.

10 **THE CHAIRMAN:** Just following up, are you  
11 considering reopening this public visitation? After 9/11,  
12 I understand that there was a perception that that's not a  
13 good idea to bring in the public on site. I think that  
14 the communities are now revisiting this thought. Are you  
15 contemplating changing the policy on that?

16 **MR. WALKER:** For the record, Bob Walker.

17 Thank you, Mr. President. We've considered  
18 a number of approaches by which we can reach the outreach  
19 of the nuclear laboratories in our science and technology  
20 mission; increasing the number of students that we have  
21 participating, once again, in Chalk River. I would  
22 highlight that this past summer, we had over 100 students  
23 that were part of our workforce; the key partnership with  
24 the Deep River Science Academy continues to be an  
25 underpinning of that.

1                   Increasingly opening our facilities for  
2 others in science in Canada to use them and through that  
3 to increase an inflow of students through our sites  
4 whether at the high-school level or at the graduate-  
5 student level.

6                   The opening of the Visitation Centre does  
7 continue to pose certain challenges to our security  
8 apparatus, but in the concept of us opening our doors more  
9 to the world again, we are exploring every possibility to  
10 do so.

11                   **THE CHAIRMAN:** of course, I'm aware of all  
12 your science-based students; they're already on your side,  
13 so to speak. They are really aware and know what nuclear  
14 activity is about. It's the John Public that normally  
15 doesn't have a clue and I am actually surprised that post-  
16 Fukushima, I thought you would get a lot more negative  
17 data and so there's a challenge here to try to explain  
18 what it is that you do to the population at large that may  
19 not be interested in you.

20                   So I understand the industry as a whole is  
21 rethinking its visitation concept so we'll see what comes  
22 out of that.

23                   Staff? You know that there is a perception  
24 that the CNSC imposed this prohibition.

25                   **MR. JAMMAL:** Ramzi Jammal, for the record.

1 I'm not going to visit the past, sir, but  
2 however as part of our review with respect to changes that  
3 are taking place, that's one of the elements we are  
4 working with our licensees and the specific or security  
5 division in order to make sure there are no perception and  
6 no ambiguity with respect to education and opening the  
7 sites for the public for education purposes.

8 **THE CHAIRMAN:** Monsieur Harvey?

9 **MEMBER HARVEY:** Monsieur, le president.

10 Are you aware if a similar study could have  
11 been achieved in the area for the general public that  
12 could permit to compare the results for youth and the  
13 general public?

14 Mr. Campbell?

15 **MR. CAMPBELL:** Thank you.

16 I did do a fair amount of research  
17 beforehand. The Canadian Nuclear Association, who I  
18 understand is making a submission later on, they tend to  
19 track public opinion and while there's nothing as  
20 comprehensive as I would have liked to have seen, it  
21 certainly exists and it's them who are doing it.

22 **MEMBER HARVEY:** Interesting.

23 Just turning to the staff, is there any  
24 provision in our requirements when you are -- requirements  
25 that touch the communication, to say that you've got some

1 -- you have to have something for the youth and something  
2 for the public and is it only a general requirement?

3 **MR. JAMMAL:** Ramzi Jammal, for the record.

4 Without going into the details, our  
5 requirements are general with respect to disseminate  
6 scientific information as a CNSC -- as a Commission on its  
7 own as a staff perspective.

8 With respect to the public programs --  
9 public-information program, it's more of a general and  
10 then as once the -- as I mentioned before, we have this  
11 systematic approach right now where it's being formalized  
12 looking at the community around it and the program that  
13 the licensee has in place to reach to its surrounding  
14 community and beyond based on the needs of the community  
15 and then we're putting in place this program from the  
16 proactive disclosure of events to the educational aspect  
17 and information sessions of the public.

18 I hope I answered your question. We don't  
19 have a specific unique to target a student or a household  
20 or a certain type of gender or anything of that sort; it's  
21 more of a global nature and the licensee are the one who  
22 will propose the program. We'll review it to ensure that  
23 there is quite an extensive global dissemination of  
24 information.

25 **MEMBER HARVEY:** Merci.



1                   **MR. CAMPBELL:** Thank you, a fair question.

2                   I became interested in this project because  
3                   I saw that the Participant Funding Program process was  
4                   being offered through the Canadian Nuclear Safety  
5                   Commission as of recently and my background is in  
6                   education. It's in communication and outreach and  
7                   particularly with respect to the environment.

8                   I'm interested in environmental  
9                   communication and I've often identified the nuclear issue  
10                  as one where there's a particular absence of effective  
11                  communication, effective education, effective outreach,  
12                  and my research supported that.

13                  Generally, you get polarized views and  
14                  where you see polarized views that's a pretty strong  
15                  indication of a vacuum in terms of strong communication  
16                  and strong education.

17                  So I look forward to building on this  
18                  research, hopefully in other communities, in which to  
19                  build a strong case to show that nuclear education and  
20                  nuclear communication is lacking and it's to the detriment  
21                  of everybody. It's to detriment of communities, it's to  
22                  the detriment of the growth of the industry in Canada, and  
23                  there's lots of opportunity there.

24                  **THE CHAIRMAN:** Well, thank you. I thought  
25                  your presentation very interesting. Thank you very much.

1                   The next submission is an oral presentation  
2 by the Deep River Science Academy as outlined in CMD 11-  
3 H7.11. And I understand that Dr. Turner will make the  
4 presentation.

5                   Please proceed.

6  
7                   **11-H7.11**

8                   **Oral presentation by the**  
9                   **Deep River Science Academy**

10  
11                   **DR. TURNER:** Thank you.

12                   For the record, my name is Carl Turner.  
13 I'm Chairman of the Board of the Deep River Science  
14 Academy and I thank the Commission for providing me with  
15 the opportunity to speak today.

16                   I'm here today to bring you a good news  
17 story about a 25-year partnership between Atomic Energy of  
18 Canada Limited and the Deep River Science Academy.

19                   The mandate of the Deep River Science  
20 Academy is to foster enthusiasm amongst our high school  
21 students for choosing careers in science and engineering  
22 and, in particular, in research and development.

23                   We do this in a way that provides them with  
24 an opportunity to participate firsthand in doing research  
25 and development in a research laboratory, learning more

1       about the scientific method, and also just getting a  
2       better understanding of how science and engineering are  
3       practiced amongst the professionals and help them to make  
4       informed career choices as they make their decisions for  
5       their further education.

6                   The concept of the Deep River Science  
7       Academy is unique in Canada and, to our knowledge, it's  
8       unique in the world.

9                   Each research project has a team -- is  
10      conducted by a team of four people. Two of those are high  
11      school students and they work under the supervision of a  
12      tutor who is an undergraduate from university and a  
13      supervisor who is a professional scientist or engineer  
14      working at the laboratory.

15                   What is unique about this concept also is  
16      that the students are working on real science; they're  
17      working on a real research and development project that's  
18      part of the program of the professional scientist. We're  
19      not just giving them science experiments to do in the  
20      local high school laboratory, they actually -- the  
21      projects are carefully selected so that the students can  
22      participate in a meaningful way at their level in the  
23      project but, at the same time, it must advance the  
24      research interests of the supervisor.

25                   We've learned over the years that the

1 optimum size for this program at any given campus is about  
2 30 students, high school students, and that would be 15  
3 projects. And there aren't that many regions in the  
4 country and in Ontario that have a research laboratory  
5 that's large enough to provide up to 15 or more research  
6 projects in any given year. So we're very fortunate that  
7 we can rely on Chalk River Laboratories, AECL, to provide  
8 a lot of these projects.

9 We encourage submissions and working with  
10 other researchers from other organizations but the fact of  
11 the matter is the majority of the projects have come, and  
12 continue to come, from Chalk River.

13 This requires a certain amount -- a  
14 considerable amount I should say -- of dedication on the  
15 part of the supervisor. They must supervise the tutor for  
16 four months; the students are there for six weeks doing  
17 the project. And during that period of time there's a lot  
18 of interaction between the supervisor, the tutor and the  
19 students. And so it takes a real commitment, not just on  
20 the supervisor, but on behalf of AECL who encourage the  
21 staff to take on these projects and provide that support.

22 So what do the students achieve? As I  
23 mentioned, they're -- the academy runs for six weeks in  
24 the summer. We are a private school, we are accountable  
25 to the Ministry of Education and the students who

1       successfully graduate earn two co-op credits which goes  
2       towards their high school diploma.

3                       But they learn much more than that. As I  
4       said, they get a front row seat at how science is done,  
5       research and development is done. They practice the  
6       scientific method and they learn to -- what they can  
7       actually -- they get a much better idea about what they  
8       can achieve.

9                       If you sat in on the presentations that the  
10       students make before graduation, each student must make a  
11       presentation and write a report, and the presentations are  
12       open to the public on the day before graduation. If you  
13       sat in on these presentations, I think you would be very  
14       impressed at how far these students have come in their  
15       learning and in their understanding.

16                      So how does AECL help us to achieve our  
17       objectives? Well, first and foremost, AECL provides us  
18       with financial support. Each year we have a -- we don't  
19       rely entirely on AECL for funding by any means; we reach  
20       out to a broad cross section of industry and target the  
21       nuclear industry in particular.

22                      But AECL provides us with generous  
23       financial support and the infrastructure to deliver the  
24       program. Not just the laboratory space but all of the  
25       staff required to process the students through. They work

1 -- most of the projects are done at the labs and so the  
2 students must be processed through the system and so they  
3 are entrenched, they are allowed to work at the  
4 laboratories.

5           When they get there, they are exposed to a  
6 very strong safety culture. They learn safe laboratory  
7 practices, they learn radiation protection, they learn how  
8 to handle chemicals and they learn the discipline of  
9 working in a professional R & D lab.

10           AECL also provides tours of the facility,  
11 again, just to expose the students to as broad a range of  
12 science, technology, as are available at the Chalk River  
13 Laboratories.

14           So there's a considerable commitment from  
15 AECL to do this and we greatly appreciate it.

16           Now, over -- I should mention we've been in  
17 operation for 25 years; we just had our 25<sup>th</sup> anniversary.  
18 We've had over 1,200 high school students and 600  
19 university undergraduates as tutors passing through our  
20 system. We talked about educating students about -- a  
21 little bit about nuclear.

22           We -- all of our alumni, when they leave,  
23 they are ambassadors for the nuclear industry. And I  
24 don't mean that we've brainwashed them into being pro  
25 nuclear. What I mean is that they understand how a

1 nuclear site -- they understand how the industry works.

2 They understand what we do. They  
3 understand enough about nuclear power and nuclear research  
4 facilities like NRU that they can make informed decisions  
5 about their relative safety and are informed about the  
6 role that they play in our society today, in a modern  
7 society. So that's what I mean by nuclear ambassadors.

8 We're constantly looking for ways to extend  
9 our reach, and we've just -- are in the process of  
10 developing a new program which we call Inreach in which we  
11 take this concept where we involve the students in R & D  
12 in the summer time at the laboratories and, through the  
13 internet, are trying to deliver it to high schools.

14 You know, the goal is to be able to deliver  
15 it anywhere in the country via the internet.

16 We have a pilot project which is under way  
17 this fall -- it just started -- at Opeongo High School  
18 down near Barry's Bay. We're still on the learning curve  
19 on how to do this, but again, it's something that we could  
20 not be doing without the full support of AECL.

21 And, again, it's a wonderful outreach to  
22 high school students, helping them to grow in confidence  
23 in their own abilities, in their understanding of science,  
24 and in their understandings of the kind of contribution  
25 that they can make as mature men and women.

1 Thank you very much.

2 **THE CHAIRMAN:** Thank you.

3 Questions? Dr. Barriault.

4 **MEMBER BARRIAULT:** Just one brief question.

5 How are students chosen for participation  
6 in this program?

7 **DR. TURNER:** They have -- how are the  
8 students chosen? They have to apply. We have a -- we're  
9 in the midst of our promotions campaign right now.

10 We are looking for students that are  
11 passionate about science, so we do target science  
12 students. We target the -- we work through the National  
13 Science Fair and we're putting out 3,000 -- we're getting  
14 in touch with 3,000 students across Canada who've attended  
15 science fairs.

16 We go to science teachers' conferences,  
17 Science Teachers of Ontario, their conference and other  
18 conferences, and try to get our message out.

19 So they have to apply. And one of the  
20 important criteria in the application -- they're given  
21 instructions on what they have to do -- we ask them to  
22 write a little -- not an essay, but a short piece on why  
23 they want to attend the Deep River Science Academy.

24 We look at marks, we look at other things,  
25 but we really look at why they want to come. And we look

1 for that passion.

2 And, ultimately, I would say it's the  
3 passion we're looking for. And some students, it comes  
4 across. They really, really, really want to come. And  
5 those are the ones we love to have.

6 **MEMBER BARRIAULT:** Thank you.

7 Thank you, Mr. Chair.

8 **THE CHAIRMAN:** Mr. Tolgyesi.

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

11 Is registration limited to the area or it's  
12 open for -- somebody from Toronto could come?

13 **DR. TURNER:** We have -- over the 25 years,  
14 we've had students from 10 provinces and one territory.  
15 The only place we haven't had anyone from is Yukon  
16 Territory.

17 Early in the -- and so we try to reach out  
18 to students across the country. We attend the Maritimes  
19 Science Teachers' Association, Ontario, and we have an  
20 advertisement, at least, out in the west. So we reach  
21 them all.

22 Early in the years of operation, one  
23 student from the Northwest Territories rode four days on a  
24 bus to get to the Science Academy to attend the summer  
25 school.

1                   So -- and our statistics, most of our -- I  
2 would say probably half -- over the years, about half have  
3 come from Ontario and about half have come from elsewhere  
4 in the country. We make a concerted effort to draw from  
5 across the country.

6                   **MEMBER TOLGYESI:** It's a limited number. I  
7 think you said it's 36 or something like that.

8                   Do you have a waiting list, or no? It's  
9 much more interest than you could accommodate?

10                  **DR. TURNER:** We do have -- we have students  
11 on a waiting list. Attracting students is always a  
12 challenge, and it's changed over the years. We've had to  
13 change the way in which we reach out to students.

14                  We would -- we are not at our maximum at  
15 the moment for a single campus, and that is not limited by  
16 the students who apply. It's limited by our overall  
17 funding. It's an expensive program to deliver.

18                  These tutors, university undergraduate  
19 tutors, that's their summer job. They have to be paid.  
20 We have -- so we have a lot -- about 40 percent of our  
21 program costs are salaries to university students. The  
22 program director is a university undergraduate.

23                  We have people who -- we care for these --  
24 the students are our responsibility 24/7 for 6 weeks and  
25 so they stay at a camp, a local camp, and we have people

1           who -- you know, supervisors who stay with them.

2                         So at the moment, our size of our school is  
3           limited by the funding available. But we do have ideas  
4           for opening campuses in other provinces, and -- but we  
5           have more ideas than funding at the moment.

6                         But we're constantly looking.

7                         **MEMBER TOLGYESI:** And my last question is,  
8           you know, the previous person was talking about low  
9           awareness in the region about nuclear energy and Chalk  
10          River Laboratories.

11                        Do you have any comments because you are  
12          quite involved with the youth and the nuclear energy also?

13                        **DR. TURNER:** Well, I'm -- I was thinking  
14          that the survey was to high school students in general.  
15          We don't know how it was distributed. One asked if it was  
16          distributed by the science teacher. I hope it wasn't  
17          distributed just by the science teacher.

18                        But our outreaches is specifically to the  
19          science students. I mean, it's not -- you have to decide  
20          with who you're -- who you're reaching out to.

21                        So I'm not overly surprised. I think he's  
22          posed a challenge for outreach to the high schools for us.

23                        We -- if he -- we have recently partnered,  
24          developed a partnership with Renfrew County Science Fair,  
25          and that's just in the last year. And that reaches out to

1 the high school students in Renfrew County. And as we  
2 continue to work with them, we will look for more ways of  
3 getting -- making sure that at least the high school  
4 students in Renfrew County know about not just the Deep  
5 River Science Academy, but know about AECL and challenge  
6 them to come and enrol in our school -- either enrol in  
7 the school or perhaps this Inreach will come to their high  
8 school and they will be able to have a view into the  
9 workings of the lab that way.

10 **MEMBER HARVEY:** Monsieur le président, just  
11 -- my question goes to AECL.

12 You are providing funds and space and  
13 services to that school. Are you getting back some  
14 scientific benefits from the research that is performed  
15 during those summers?

16 **MR. WALKER:** Bob Walker, for the record.

17 As a Federal Crown Corporation, we see it  
18 as one of our obligations to contribute to the federal  
19 policy of developing highly qualified people for Canada's  
20 innovation economy. And one of the instruments we use is  
21 by opening our doors to students to work with us.

22 So I would say that the benefit is not one  
23 that necessarily accrues directly to Chalk River, but is  
24 Chalk River's contribution to strengthening the science  
25 base within Canada at large.

1                   We are very much a supporter of the Deep  
2 River Science Academy, recognizing people like Dr. Turner  
3 in their volunteer roles, and we are looking at  
4 formalizing the relationship so that the Deep River  
5 Science Academy has some predictability around the funding  
6 support around which it can provide plans for the future.

7                   Thank you.

8                   **MEMBER HARVEY:** I was also thinking of the  
9 scientific benefits, if you got some -- you made some  
10 research and you got interesting results, could those  
11 results be used by AECL to develop anything?

12                  **MR. WALKER:** Bob Walker, for the record.

13                   One of the key attributes of the Deep River  
14 Science Academy is the students are working on real  
15 projects in our science program. Supervisors don't make  
16 up the projects.

17                   These are parts of our program, and we --  
18 as Dr. Turner indicated, we engage the students directly  
19 in the context of the real science laboratory.

20                  **MEMBER HARVEY:** Merci.

21                  **THE CHAIRMAN:** Anything else?

22                   In the same vein, just to follow up, I'm  
23 more interested in, are you keeping track of your  
24 graduates, because you give us a 1,200 number of all of  
25 them. Are they mainly employed in the nuclear sector?

1                   And is anybody getting employment at AECL  
2                   or the rest of the Nuclear Power Plants or, presumably,  
3                   they're coming in with a passion for nuclear, presumably  
4                   you should see them -- the industry should support your  
5                   view of good benefit -- a good provider of highly-  
6                   qualified personnel.

7                   **MR. CAMPBELL:** Yes, we undertook a survey  
8                   about five years ago. It was fairly labour-intensive. We  
9                   tried to contact all of our alumni, all 1,200 students,  
10                  and we reached 25 percent of them and gathered the  
11                  statistics in terms of where they were employed and what  
12                  degrees they got, et cetera.

13                  It becomes harder and harder to keep track  
14                  of them as they move along, so we have lots of -- we have  
15                  a fairly good idea of what graduating degrees they had and  
16                  what post-graduate degrees they got. Once they get out  
17                  into the work place, it's harder.

18                  So the numbers we have are not great, at  
19                  that point, but we do know that the companies that they  
20                  list, the ones who did respond, they list companies like  
21                  Ontario Power Generation and Bruce Power and I think even  
22                  the CNSC, and other organizations; some of them we know  
23                  are working at Chalk River Laboratories.

24                  We do have some instances where a student  
25                  -- a person has come to us as a student, returned as an

1       undergraduate tutor, and is now working at Chalk River  
2       Laboratories.

3                       And there was a federally funded program  
4       that we had for about three years, and it was actually  
5       quite successful. We were their success story. The  
6       purpose of it's -- it was Service Canada, and the purpose  
7       of it was to take undergraduates and they would provide  
8       funding for them to work for the first eight months or  
9       something, in the workplace, trying to get students --  
10      trying to encourage and help graduates find employment.

11                      And I think out of that we have about --  
12      the number is about 10 -- about 10 of those Service Canada  
13      tutors are -- as of a few years ago, were working at Chalk  
14      River Laboratories.

15                      So it's easy to keep track of the ones who  
16      find a job at Chalk River, or within AECL, because I can  
17      look up their name. It's a little bit harder to do that  
18      at Ontario Power Generation and Bruce Power and elsewhere.

19                      We're going to be doing another survey in  
20      the next 12 months, and the last survey relied on the  
21      telephone. On this next survey, we're going to be using  
22      various social networking tools that are available to us  
23      and try again.

24                      **THE CHAIRMAN:** Thank you. It sounds to me  
25      like you should make a pitch for Ontario Power Generation

1 and for Bruce Power, if that's -- thank you very much. We  
2 have to move on.

3 And the next presentation is an oral  
4 presentation by Lantheus Medical Imaging Inc., as outlined  
5 in CMD H7.5. And I understand Monsieur Villeneuve, you  
6 will make the presentation? Please proceed.

7  
8 **11-H7.5**

9 **Oral presentation by**  
10 **Lantheus Medical Imaging, Inc.**

11  
12 **MR. VILLENEUVE:** Thank you.

13 Members of the Commission and interested  
14 citizens, thank you for the opportunity to provide an  
15 industry perspective on the licence extension request for  
16 Chalk River Laboratories.

17 My name is Cyrille Villeneuve, and I'm the  
18 Chief Commercial Official for Lantheus Medical Imaging.  
19 Also present with me is Mr. Ira Goldman, Director for  
20 Strategic Supply for Lantheus.

21 I would like to give you a brief overview  
22 of Lantheus Medical Imaging, our Canadian operation, and  
23 our support for the relicensing of NRU reactor, given its  
24 continuing important role in providing critical isotopes  
25 for nuclear medicine procedures for patients in Canada,

1 North America, and other parts of the world.

2 Lantheus Medical Imaging is a global U.S.  
3 company based in North Billerica in Massachusetts. We  
4 specialize in providing medical imaging diagnostic  
5 products for heart, vascular, and other diseases.

6 The company has been a leader in the  
7 nuclear medicine industry for more than 50 years. We  
8 brought to the market premium medical isotope products,  
9 such as Thallium and Cardiolite, both which are used in  
10 nuclear medicine to diagnose patients for cardiovascular  
11 diseases, and we believe are the leading products serving  
12 the field today.

13 Lantheus has approximately 600 employees  
14 worldwide. We are a fully integrated company with strong  
15 research and development capabilities, world-class  
16 manufacturing facilities, a strong distribution network,  
17 and dedicated employees with operations in the United  
18 States, Canada, Puerto Rico and Australia. Lantheus  
19 employs more than 80 persons in Canada, with headquarters  
20 in Montreal, including sales and marketing staff, customer  
21 service, and radiopharmacy employees.

22 Lantheus international operations are also  
23 managed from Canada, by Canadians.

24 De plus, Lantheus exploite cinq  
25 radiopharmacies situées à Québec, à Montréal, à

1 Mississauga, à Hamilton et Vancouver. Ces radiopharmacies  
2 préparent des doses unitaires prêtes pour injection  
3 distribuées deux fois par jour aux départements de médecine  
4 nucléaire de certaines cliniques et des hôpitaux  
5 environnants.

6                   Lantheus met également sur pied à l'heure  
7 actuelle un réseau de sites de fabrication d'agents de  
8 tomographie par émission de positron, communément appelé  
9 TEP, ce qui permettra la distribution d'agents novateurs  
10 pour ces agents dans le futur.

11                   Comme vous le savez peut-être, Lantheus et  
12 d'autres fabricants, ont recours à l'isotope médical  
13 appelé Molybdène-99 pour produire un nucléide de filiation  
14 appelé technétium-99m.

15                   Le technétium-99m est l'isotope d'imagerie  
16 médicale le plus utilisé au monde. Chaque année aux  
17 États-Unis il compte pour plus de 75 pourcent de toutes  
18 les injections radiopharmaceutiques de diagnostic, ce qui  
19 représente plus de 14 millions de doses.

20                   Le technétium est une composante  
21 essentielle de nombreux tests médicaux importants y  
22 compris pour les scintigraphies cardiaques, celles du  
23 cerveau, des os, des reins et de certains autres types de  
24 tumeurs.

25                   Lantheus Imagerie Médicale emploie le

1 molybdène-99 dans ses générateurs TechneLite. Ces  
2 générateurs sont distribués aux hôpitaux et aux  
3 radiopharmacies comme source de technétium dans le cadre  
4 de procédure d'imagerie diagnostic.

5 Le technétium-99 est également employé avec  
6 cardiolite dans les tests d'imagerie cardiovasculaire pour  
7 aider à diagnostiquer les patients qui pourraient souffrir  
8 de coronaropathie.

9 Le 25 mars 2010, j'ai fait une présentation  
10 devant le Comité permanent des Ressources Naturelles à la  
11 Chambre des Communes, portant sur les efforts déployés par  
12 Lantheus Canada pour surmonter les effets défavorables sur  
13 nos activités et nos clients, de la pénurie mondiale de  
14 molybdène causée par l'arrêt prolongé du réacteur NRU de  
15 mai 2009 jusqu'au mois d'août 2010.

16 Au cours de cette période, Lantheus a fait  
17 tout en son pouvoir pour répondre aux besoins de ses  
18 clients et de la communauté médicale au Canada et aux  
19 États-Unis. Nous avons élargi notre réseau de  
20 fournisseurs de molybdène after de réduire notre  
21 dépendance au réacteur NRU.

22 Nous avons modifié nos échéanciers de  
23 fabrication pour permettre un emploi maximum de molybdène  
24 disponible, ce qui a exigé des quarts de production  
25 s'échelonnant presque 24 heures sur 24, sept jours par

1 semaine.

2                   Nous avons prolongé aussi nos heures de  
3 travail en radiopharmacie pour permettre une production de  
4 soirs et fins de semaine, afin de maximiser la quantité de  
5 technétium disponible pour maximiser la disponibilité des  
6 doses unitaires; donc permettre à plus de patients d'avoir  
7 accès à leurs examens.

8                   Nous avons augmenté de façon importante la  
9 production de thallium ayant recours à nos cyclotrons  
10 comme produit de remplacement. Nous avons collaboré  
11 étroitement avec nos clients pour les tenir informés de  
12 l'approvisionnement courant et prochain, grâce à des  
13 communications directes et à des mises à jour sur  
14 l'approvisionnement que nous avons affiché sur notre site  
15 web.

16                   Au Canada nous avons travaillé en étroite  
17 collaboration avec Santé Canada et les autorités  
18 provinciales en matière de santé, pour assurer une  
19 distribution des doses unitaires le plus juste possible de  
20 sorte que le plus grand nombre de patients possible  
21 reçoivent leur traitement ou ait accès à des tests  
22 diagnostiques.

23                   Depuis la remise en service du réacteur NRU  
24 en août 2010, Lantheus a maintenu son rôle de chef de file  
25 en renforçant et en élargissant la chaîne

1 d'approvisionnement mondiale diversifiée du molybdène pour  
2 assurer un approvisionnement continu et fiable en  
3 molybdène pour nos activités de fabrication TechneLite.

4 Une telle initiative profite à nos clients  
5 et aux patients au Canada et de même que dans les autres  
6 régions de l'Amérique du Nord.

7 The NRU reactor at Chalk River continues to  
8 serve a central role in our Molybdenum supply, providing a  
9 significant portion of NMI requirement in addition to the  
10 Molybdenum obtained from ANSTO in Australia, IRA in  
11 Belgium, and NTP in South Africa.

12 While Lantheus is less dependent on the NRU  
13 reactor than it was two years ago, Lantheus strongly  
14 supports the requested relicensing of Chalk River  
15 Laboratories, and NRU, for the following reasons:

16 While other producers have increased  
17 production over the past several years, NRU is still a  
18 very important contributor to the global Molybdenum  
19 supply. Its continued operations help to assure a stable  
20 and adequate international supply of molybdenum.

21 NRU is the only producer in North America  
22 and plays a special, important role in meeting the nuclear  
23 medicine need of Canada and in this continent, even if  
24 increasing amount of molybdenum required for North America  
25 is import.

1                   This is of particular importance when there  
2                   is a distribution of a long distance international flight  
3                   transport, such as from natural event, people remember the  
4                   volcano, and some terrorist incidents.

5                   While NRU produce a smaller proportion of  
6                   the regular weekly world requirement of molybdenum now  
7                   than it did two years ago, it's substantial production  
8                   capacity provide an important outage reserve capacity in  
9                   the event of the other production reactor has a lengthy  
10                  scheduled or non-scheduled outage.

11                  NRU production capacity and proximity of  
12                  Lantheus TechneLite manufacturing operation form its  
13                  substantial flexibility to meet the short-term market  
14                  requirement due to the last minute customer requests  
15                  stemming from multi-supply disruption as a result of  
16                  production, logistic or transport issue of the other  
17                  producer.

18                  Also, because of its unique design and mode  
19                  of operation, NRU reactor is a flexible asset that allows  
20                  isotope quantity to the marketplace on a very short  
21                  notice, compared to the other global reactor that cannot  
22                  be as flexible as a result of their design and the mode of  
23                  operation.

24                  There are a variety of research and  
25                  development effort and molybdenum production project in

1 Canada, in the U.S. and in other countries to establish  
2 new source of molybdenum and also produce technetium  
3 directly.

4 However, at this time, it is not clear how  
5 many of these projects will succeed and come to the  
6 market.

7 In any event, it will likely take many  
8 years before applicable new amounts of molybdenum are  
9 being reliable product for the international market. NRU  
10 needs to continue to produce as a smooth transition to the  
11 future scenario of new producer and alternative production  
12 technology.

13 Ainsi, Lanteus croit que le réacteur NRU  
14 doit continuer de jouer un rôle majeur dans la production  
15 du molybdène s'adressant au marché canadien et  
16 international et que sa licence devrait être prolongée  
17 jusqu'au 31 octobre 2016.

18 Lanteus appuie les efforts financiers et  
19 réglementaires du gouvernement du Canada pour assurer que  
20 le réacteur NRU fonctionne de manière sécuritaire et  
21 fiable, afin de répondre aux besoins des isotopes du  
22 Canada et du monde au moment où des efforts continuent  
23 d'être déployés pour trouver d'autres sources de  
24 production de molybdène.

25 Lantheus travaille avec des partenaires

1 américains et étrangers pour développer davantage d'autres  
2 sources de molybdène.

3 With our international operation based in  
4 Montreal, Lantheus has many valued customers in Canada.  
5 We are fully committed to serving the Canadian market and  
6 we will continue to do our utmost to ensure that Canada  
7 receives stable, reliable and adequate supply of medical  
8 isotopes including new technologies.

9 Lantheus Medical Imaging is committed to  
10 working with our customers, the patients that they serve,  
11 our suppliers and governmental agency to help ensure that  
12 nuclear medicine needs of Canada are met.

13 Thank you for allowing us to speak with you  
14 today. We greatly appreciate the privilege and we are  
15 happy to answer any question you might have.

16 **THE CHAIRMAN:** Thank you, merci beaucoup.  
17 Questions? Questions? Monsieur Harvey?

18 **MEMBER HARVEY:** Just one question, I would  
19 like to know the sensitivity of Lantheus to the outages of  
20 AECL. I mean, AECL will be submitted to a certain number  
21 of outages and what is the sensitivity if the -- if it  
22 lasts two weeks, three weeks, one month? Could you  
23 comment?

24 **MR. VILLENEUVE:** It's still sensitive. I  
25 think if you remember during the long outage, we were able

1 to supply mostly half of what the market needs. On the  
2 last one, during the month outage, unfortunately, it  
3 started earlier because of electricity shutdown, so we  
4 were able to supply around 80 percent of the needs for the  
5 market.

6 It's still sensitive, and longer is the  
7 outage the more difficult is it to cover. Because, you  
8 know, we're dependant of a global network supply. If you  
9 stop for two weeks, it's very easy to coordinate with the  
10 other reactor and have enough material. If you stop for a  
11 month, it started to be more difficult. If you started to  
12 have a longer one, it needs a lot of planification.

13 We are working actively to be able to  
14 supply the market expecting NRU would not produce for a  
15 period of time, but every time it's kind of difficult and  
16 sensitive.

17 **MEMBER HARVEY:** But, do you know in advance  
18 that there'll be an outage, are you linked?

19 **MR. VILLENEUVE:** Yes, we know. I think for  
20 the ones that are scheduled, yes, we know.

21 **MEMBRE HARVEY:** Merci.

22 **THE CHAIRMAN:** Other questions? Mr.  
23 Tolgyesi?

24 **MEMBRE TOLGYESI:** Selon vous, quelle est la  
25 part de la production de CRL globalement, mondialement?

1                   **MR. VILLENEUVE:** I will leave Mr. Goldman  
2 to answer that.

3                   **MR. GOLDMAN:** Thank you very much. As we  
4 mentioned, and I think as Ms. Benjamin mentioned in her  
5 statement earlier, the extended outage had an impact on  
6 the market and, certainly, the nuclear medicine market to  
7 some degree had declined because of efficiencies and moves  
8 to other modalities.

9                   At the same time, the other suppliers  
10 increased their capability to produce Molybdenum-99 to  
11 reach the market. That was mainly through additional  
12 radiation capacity in a number of research reactors.

13                   So, I think it's hard to put an exact  
14 number, I think at one point people -- it was assumed that  
15 the NRU produced about 40 to 50 percent of the world's  
16 supply of medical isotopes, perhaps it's something half or  
17 60 percent of that figure now.

18                   **MEMBER TOLGYESI:** And do you think so that  
19 after 2016, if for any reasons CRL was stop production, it  
20 will be easy to replace that production, but there will be  
21 some potential producers ready to do that?

22                   **MR. GOLDMAN:** We're, you know, we're  
23 confident that for our supply chain by 2016 we think we  
24 will have found solutions. There are projects underway in  
25 the United States, there's -- the Department of Energy has

1 funded for cooperative agreements and they have a target  
2 of producing Molybdenum-99 by the end of 2014.

3 There are risks involved in all those  
4 projects, technological, financial, market risks. But,  
5 there are four projects that are proceeding. There are  
6 other projects proceeding without Department of Energy  
7 funding and, of course, there's other technologies being  
8 explored in Canada.

9 In Europe, there are new radiation  
10 capacities coming online from existing reactors and other  
11 producers in Australia, Argentina and elsewhere are also  
12 planning new sources of production.

13 We're hopeful that those will be available  
14 by 2016, there are some risks, but we do feel that for our  
15 customer base, we will have solutions by that time.

16 **MEMBER TOLGYESI:** And, according to you,  
17 what's the importance of having a producer in a country?  
18 It's quite an important or it's not really important  
19 because it's -- the isotope is moving from site to site?

20 **MR. GOLDMAN:** Well, we know this is a  
21 short-lived isotope and the longer that it takes to get  
22 from the processing facility to the generator maker and  
23 then to the patient, the more decay you have. So, of  
24 course it's preferable to be as close as possible.

25 That being said, we have been quite

1           successfully operating an extended supply chain with  
2           suppliers from Europe and Australia and South Africa. It  
3           does involve certain risks that you have to build into  
4           your supply chain.

5                         We would see -- the best situation would be  
6           having a mix where we do have some local production, or  
7           close by production, to complement production that's  
8           farther away.

9                         **THE CHAIRMAN:** Anybody else? Just -- I've  
10          got two questions.

11                        First of all on your page two you're  
12          talking about building PET infrastructure. Is that where  
13          the industry is going, I mean, is PET -- eventually will  
14          eliminate the need for a technician?

15                        **MR. VILLENEUVE:** I think the industry is  
16          going in the direction of PET, I don't believe it will  
17          replace completely the actual technology. It's a new  
18          technology that will address some needs and -- but it will  
19          take a very long time -- at the moment we cannot say and I  
20          don't think we can predict that it will eliminate  
21          completely the technician.

22                        **THE CHAIRMAN:** Okay. So, my next question  
23          is maybe you can clue me in, how did it happen that the  
24          U.S. market which is -- consume most of the isotope  
25          production in the world, allow it to be dominated by a

1 Canadian manufacturer? And how come nobody was paying  
2 attention until 2007?

3 **MR. GOLDMAN:** Well, that goes way beyond my  
4 involvement in this business but I am actually a historian  
5 by training and I do know a little bit of the history.

6 There was a variety of commercial producers  
7 of moly-99 in the U.S. in the seventies -- sixties,  
8 seventies and eighties, some from neutron activation  
9 technology and some from fission. There was a significant  
10 producer at Cintichem which operated a reactor privately  
11 in the U.S. and closed that reactor because of a leak in  
12 the late eighties, did a business case and decided that  
13 there wasn't a business case to build a new reactor or fix  
14 the reactor.

15 At that time, I think into the breach  
16 stepped the NRU and then the privatization of Nordion and  
17 there were efforts in the U.S. in the nineties to look at  
18 alternate fission projects; in fact, a project got quite  
19 advanced at Sandia National Laboratory in the U.S. I  
20 think the Department of Energy spent something like \$50  
21 million but at that time the MAPLE program went ahead in  
22 Canada and the decision was made in the U.S. that that was  
23 going take care of U.S. needs.

24 **THE CHAIRMAN:** Well, we're not going to get  
25 into the MAPLE issue.

1                   Okay, anything else?

2                   Okay, thank you very much.

3                   I also -- by the way, I'd like to remind  
4                   everybody, believe or not, we actually do read each and  
5                   every submission that, you know, from cover to cover, so  
6                   if you -- and they are on the record, so you don't have to  
7                   reread them, unless you want to. They're all recorded and  
8                   we actually will be on the record.

9                   So with that little bit of a reminder, the  
10                  next presentation is an oral presentation by the Canadian  
11                  Nuclear Worker Council, as outlined in CMD 11-H7.6. And  
12                  Mr. Shier, the floor is yours.

13

14                  **11-H7.6**

15                  **Oral presentation by**

16                  **Canadian Nuclear**

17                  **Worker Council**

18

19                                 **MR. SHIER:** Thank you and good afternoon,  
20                                 Mr. President and Members of the Commission.

21                                 For the record, my name is David Shier, I'm  
22                                 the President of the Canadian Nuclear Worker Council, and  
23                                 with me today on my left is Mr. Gabe Peplinski and to my  
24                                 immediate further left is Mr. Gord Tapp and on my right is  
25                                 Mr. Vince Frisina.

1                   They are some of the leaders of the unions  
2                   at Chalk River and Mr. Peplinski is with the Power  
3                   Workers, he represents the union that look after the  
4                   operators; and Mr. Tapp is with the technicians,  
5                   technologists and also the clerical group; and Mr. Frisina  
6                   is with the professionals, scientists and the engineers.

7                   The majority of the other unions at Chalk  
8                   River are members of our council as well the -- most of  
9                   the unions at the other AECL sites.

10                  For the record, the Canadian Nuclear Worker  
11                  Council is a council of unions that represents members  
12                  working in Canada's nuclear industry from across Canada,  
13                  many of the four nuclear provinces as we refer to them as.

14                  I did -- I took your tip about having read  
15                  our submissions so I will be brief. I don't know if that  
16                  was directed at us or not; however, I would be remiss if I  
17                  didn't comment on the issue of health and safety at the  
18                  site and there is a large number of unions at the site,  
19                  they all participate in health and safety.

20                  Health and Safety is paramount to these  
21                  union leaderships and their membership. So each of the  
22                  unions there has a representative on the Joint Health and  
23                  Safety Committee. It is a large committee, it has a  
24                  number of unions, but the good news of that is that makes  
25                  us a very small ratio between workers and members on the

1 Joint Health and Safety Committee so it ensures that  
2 issues are brought up.

3 There is a culture established that health  
4 and safety issues are brought forward, there's a lot of  
5 mechanism in place to deal with issues, these workers by  
6 law have the right to refuse unsafe work, and at different  
7 times this does happen. So safety culture is alive and  
8 well at the facility.

9 The other area I should mention too as we  
10 did touch on in our submission in regards to labour  
11 relations. It's no big secret that it's been a kind of a  
12 tough time for workers here with all the turmoil and the  
13 restructuring of AECL; they're currently all in  
14 negotiations as well.

15 But we'd like to assure the Commission and  
16 the public that in no way does this type of labour  
17 relations issues -- labour relations is very good, there's  
18 lots of mechanisms to deal with issues and it does not  
19 jeopardize the safety of the site. Safety is still  
20 paramount.

21 I'd also like to comment on the public  
22 perception. As we know the workers on this site are part  
23 of the public and they, every day, interact with other  
24 members of the public and they, like other workers in the  
25 industry post-Fukushima, do get a lot of questions and

1 issues raised by their friends and neighbours and answer  
2 them appropriately.

3 And from their perspective, the public is  
4 very supportive and does not have a lot of fears about the  
5 site, and Mayor Thompson this morning kind of confirmed  
6 that, from his perspective, that the workers that are in  
7 the community and they hear from them, ensures that it is  
8 a safe operation.

9 What I'd like to do now before concluding  
10 is ask Mr. Peplinski to provide you with some comments  
11 from his perspective.

12 **MR. PEPLINSKI:** Good afternoon,  
13 everyone. My name is Gabriel Peplinski, for the record.

14 I'm an operator at AECL and also Chief  
15 Steward for QP1000, representative of PWU and all  
16 operators at Chalk River site.

17 We as operators are sometimes considered  
18 the eyes and ears for management and we're the frontline  
19 contact with systems and processes that help run the  
20 reactor.

21 We as a group wish to sponsor AECL with the  
22 relicensing and are confident in the day-to-day operations  
23 of the facility.

24 We as a group have a strong sense of safety  
25 first and have ongoing regular meetings with management in

1 regard to a safe environment.

2 Citizens of Renfrew County have embraced  
3 the fact of AECL here as it contributes to local economy  
4 through jobs in the area as well as for the support  
5 industries.

6 I firmly believe that they are very few  
7 concerns in regard to safety issues by the public. Also,  
8 in light of the ongoing isotopic supply, people realize  
9 the health benefit created as to the availability of  
10 medicines for treatment.

11 Thank you.

12 **MR. SHIER:** Thank you. Dave Shier, for the  
13 record.

14 Just -- I'd like to make one comment in  
15 addition to one of the previous intervenors, the Deep  
16 River Science Academy.

17 Union support training and that and  
18 educating our younger people as well and I guess for the  
19 record, the intervenor indicated they get funding from  
20 AECL and other industry, but he neglected to say they get  
21 it from the labour unions as well. My union, the Power  
22 Worker's Union is -- have been a long-term supporter of  
23 that academy, so -- a little publicity for my  
24 organization.

25 So in conclusion, we -- the Nuclear Worker

1 Council is in full support of the relicensing of AECL and  
2 we'd be happy to answer any questions that you may have.

3 Thank you.

4 **THE CHAIRMAN:** Thank you.

5 Questions? Dr. Barriault.

6 **MEMBER BARRIAULT:** Just one brief question.

7 You mentioned in your presentation that  
8 workers have a right to refuse unsafe work practices.  
9 Have you had any refusal at all at the AECL facility that  
10 you are aware of?

11 **MR. SHIER:** Lots of times refusals happen  
12 at the -- right at the workplace interface and some  
13 employers record them, some don't. I don't have any  
14 knowledge of any recently, I don't know if any of my  
15 colleagues do.

16 All right, I'll let Mr. Tapp give you some  
17 examples.

18 **MR. TAPP:** For the record, my name is  
19 Gordon Tapp; I'm President of CRTT representing 850  
20 thereabouts workers at Chalk River.

21 Just recently we did have what we prefer to  
22 call a "work stand-down" at one of the waste management  
23 areas where there was a change in security practice and  
24 our -- and the workers up there felt that there was a  
25 problem. There was some miscommunication that led to

1 that; however, as soon as it became a little more  
2 pronounced that these people were worried enough about the  
3 changes, how it may affect their working environment and  
4 safety, they requested an immediate meeting and management  
5 reacted extremely quickly to resolve it. I might want to  
6 also point out that when we talk about a work refusal,  
7 there's usually an immediate and present danger that the  
8 people are responding to.

9 This was not the case. It was a perceived  
10 -- a perception more than a reality, or it wasn't an  
11 immediate problem. It was a perception of what may happen  
12 under certain circumstances.

13 So it was a work stand-down. It was  
14 resolved very quickly, within 24 hours, and work resumed.

15 **MEMBER BARRIAULT:** Thank you.

16 Would AECL care to comment? Not to the  
17 specific incident, but in general.

18 **MR. WALKER:** I'm Bob Walker, for the  
19 record.

20 The comment was made that our frontline  
21 workers are often the eyes and ears for management. I  
22 fully support that.

23 The regular engagement with our union  
24 leadership provides the management at AECL with one more  
25 pulse on what we share in common, union members and our

1 employees. And I believe we have a healthy relationship  
2 where our workers do live a safety culture, and when they  
3 are up close and personal and see issues that they bring  
4 them forward constructively and positively.

5 And we, on the management side, are  
6 committed to early resolution.

7 And the example that was referenced is a  
8 good case in point of that process working.

9 Thank you.

10 **MEMBER BARRIAULT:** Thank you.

11 Would CNSC care to comment on how they  
12 would deal with these situations when they occur, or are  
13 you aware of them?

14 **MR. JAMMAL:** I'll refer the question to our  
15 site office supervisor, Mr. Reuben Marini.

16 **MR. MARINI:** Good afternoon. This is  
17 Reuben Marini, for the record. I'm the Chalk River CNSC  
18 site office supervisor.

19 Usually when there are issues like the ones  
20 that were just brought up by the union representatives  
21 here, we are aware. We were aware very quickly about this  
22 one here, and we paid a visit to the site and we looked  
23 into the safety concerns that the people had.

24 But it was quickly resolved by management,  
25 so -- by AECL management. They acted quickly, so we had

1 no further concerns.

2 **MEMBER BARRIAULT:** In the run of a year,  
3 how many cases would you have; in a 12-month period?

4 **MR. MARINI:** Can you repeat the question,  
5 please?

6 **MEMBER BARRIAULT:** In a 12-month period,  
7 how many cases would you have of work step-down, I guess,  
8 occurring?

9 **MR. MARINI:** Reuben Marini, for the record.  
10 Just this one here in the last 12 months.

11 **MEMBER BARRIAULT:** Thank you.

12 Thank you, Mr. Chairman.

13 **MR. SHIER:** If I could make a comment on  
14 that.

15 We look at -- and some of our employers  
16 support us -- look at work refusals as a positive aspect,  
17 that it does show a questioning work force.

18 In regards to when they go through the  
19 process, if they're not solved locally, then the  
20 regulatory group is called in, either Labour Canada or the  
21 Ministry of Labour, for example, in Ontario.

22 There was recently a protocol put together  
23 by the CNSC and the Ministry of Labour in Ontario that --  
24 where they get injected into any work refusal issues,  
25 let's say, reach the regulatory stage as well.

1                   **MEMBER TOLGYESI:** Do you have any comments  
2                   on community emergency plan measures and communications?  
3                   Do you feel they are satisfactory?

4                   **MR. SHIER:** We naturally review any of  
5                   those issues when they do come up and, again, it's our --  
6                   it's the members of the unions that are -- that form part  
7                   of the public, and so any information we receive from our  
8                   memberships is they're happy with them.

9                   They're probably more up -- naturally more  
10                  up to speed on the issues are then the regular public  
11                  because they do work in the facilities, and if there was  
12                  any need for anything, they would know about it right away  
13                  as well.

14                  So I think from the perspective of the  
15                  workers, they don't have any difficulties with it.

16                  **MEMBER TOLGYESI:** And the other one is, I'm  
17                  coming back to this youth awareness about nuclear energy  
18                  and about -- more specifically about emergency.

19                  Do you have any comments on that? Because  
20                  unions are involved with youth also, you know.

21                  **MR. SHIER:** Dave Shier, for the record.

22                  Yes, we do a certain amount of outreach.  
23                  Most of our outreach is within the -- in the labour  
24                  movement, and we try and engage some younger people in  
25                  those forums.

1                   Unfortunately, the demographics of the  
2                   labour movement is very similar to what we see in the  
3                   nuclear industry, so we don't have as many young people  
4                   involved as there used to be.

5                   But with the transition, there's going to  
6                   have to be more of them coming into the workforce and into  
7                   the unions, so there is programs out to get youth more  
8                   involved.

9                   We have a youth representative on our  
10                  executive of our nuclear council.

11                  There definitely is -- we try and engage  
12                  youths at different times any opportunities we have.  
13                  There is some different perspective. There is a lot of  
14                  room for getting some education out there.

15                  I know there's some talk of getting more  
16                  information into the schools and so on and so forth, so I  
17                  think it's important for everybody, the CNSC, the industry  
18                  and the unions, to try and educate the new workers coming  
19                  forward about these types of issues.

20                  We're starting to use the electronic media,  
21                  which is -- we know the real young people don't seem to  
22                  read, but they'll read it on Twitter and Facebook. And  
23                  we've been starting to become active in that area as well.

24                  **MEMBER TOLGYESI:** I was thinking more  
25                  specifically about the youth, you know, in the high school

1 age, what the survey was saying, because employees are  
2 living in this community, so lots of them have kids. And  
3 I was curious if you have any feedback from them that --  
4 about the youth and their awareness?

5 **MR. SHIER:** Dave Shier, for the record.

6 No, nothing concrete. We do hear little  
7 bits here and there, you know, just personal contacts with  
8 people. And we agree that there is a lack of knowledge  
9 and lack of support there.

10 **THE CHAIRMAN:** Anything else?

11 I just have one question, maybe for CNSC  
12 and for the intervenors, about the effectiveness of this  
13 Joint Health and Safety Committee, the JHSC.

14 It looks like it's a very large  
15 representative, kind of, of the site and of management.  
16 What I'm curious to know, is it working properly, does it  
17 have minutes, minutes of follow-up, et cetera?

18 And just out of curiosity, CNSC, do you  
19 ever check or is it available to you to check or not,  
20 about what's going on internally about this so-called  
21 safety culture?

22 **MR. SHIER:** Dave Shier, for the record.

23 These committees are mandated by law under  
24 the labour legislation, and there is requirements that  
25 they have to have minutes, they have to be done on a

1 regular basis and minutes have to be posted, so on and so  
2 forth.

3 It is a very large committee, and there's  
4 pros and cons to a large committee. The effectiveness in  
5 my end of the business looking after the -- with my other  
6 hat, assisting the power worker group, some issues -- a  
7 lot of issues that go forward. It's an older facility, so  
8 naturally, there's a lot of issues in that regard.

9 If they don't get resolved at the local  
10 committee, then they can go to Labour Canada for a  
11 decision. I think that's happened on some cases but not  
12 all the time, so it does seem to be working.

13 There's always room for improvement, and as  
14 I said, there's pros and cons to the large committee.

15 **THE CHAIRMAN:** Are these the classical  
16 health and safety, you know, workplace health and safety  
17 rather than any of the nuclear safety? Nuclear safety has  
18 not been -- maybe AECL can help me on this one.

19 **MR. SHIER:** Dave Shier, for the record.

20 Yes, it's very -- all the nuclear stations  
21 have Joint Health and Safety Committees. They're not as  
22 large as this one because they don't have the same number  
23 of unions.

24 Under the law, it says that unions will be  
25 -- will appoint members to the committee, so the large

1 number of unions, that's why you get into it.

2 For example, Pickering, we have 6 worker  
3 members from the workplace unions -- actually, 12; 6 from  
4 the one union, 6 from the other union.

5 Point Lepreau, it has a smaller number, so  
6 depending on the size of the workplace.

7 But there again, mandated by -- in Ontario,  
8 Ontario Power Generation and Bruce Power is mandated by  
9 the Ministry of Labour there. The Cameco facilities and  
10 the AECL facilities in Point Lepreau are mandated by the  
11 Labour Canada legislation, so it is laid out in the Act.

12 **THE CHAIRMAN:** So just so I am  
13 understanding, where is the so-called nuclear health and  
14 safety being discussed, or the ongoing improvements? Is  
15 there a committee? It's not in this committee, is it?

16 **MR. LESCO:** Randy Lesco, for the record.

17 What's being discussed at these health and  
18 safety committees is not only industrial issues, but also  
19 radiological issues that should be -- require attention.

20 **THE CHAIRMAN:** So if somebody has, I don't  
21 know, a suggestion for improved operations, it will be  
22 discussed in that committee?

23 **MR. LESCO:** Randy Lesco, for the record.

24 That is correct, and follow-up actions are  
25 set accordingly.

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

2                   Staff?

3                   **MR. ELDER:** Peter Elder, for the record.

4                   These are -- as has come out, this is a  
5                   requirement under the *Canada Labour Code*, but they all --  
6                   they cover all the occupational health and safety issues,  
7                   nuclear or non-nuclear, on the site.

8                   We have access to the minutes if you want  
9                   them but, as Mr. Lesco has said, they also -- any actions  
10                  come out, they sort of then go into AECL's corrective  
11                  action program and we do then have the ability to follow  
12                  up and make sure that any corrective actions that are of  
13                  interest to us have been -- we have the ability to follow  
14                  up and make sure they're done.

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

16                  Anything else? Thank you very much.

17                  Let's see if we can do one more before the  
18                  break.

19                  The next submission is an oral presentation  
20                  by Best Theratronics and the Cancer Centre of Southeastern  
21                  Ontario, Medical Physics Department, as outlined in  
22                  CMD-H7.7, and we have Dr. Shreiner and Dr. Wassenaar to  
23                  make the presentation.

24                  Please proceed.

25

1       **11-H7.7**  
2       **Oral Presentation by**  
3       **Best Theratronics and the**  
4       **Cancer Centre of Southeastern**  
5       **Ontario (CCSEO)**  
6       **Medical Physics Department**  
7

8                   **DR. SHREINER:** Thank you, Mr. President.  
9 Thank you, Members of the Board for giving us the  
10 opportunity to come and talk to you.

11                   I am John Schreiner, as was stated. I'm  
12 the Chief Medical Physicist at the Cancer Centre of  
13 Southeastern Ontario at the Kingston General Hospital. I  
14 am also the Radiation Safety Officer for the hospital and  
15 for the CCSEO, and I'm an adjunct full professor in the  
16 Departments of Oncology and Physics at Queen's University.

17                   And Richard Wassenaar is the Radiation  
18 Safety Officer at Best Theratronics and an adjunct  
19 professor in the Department of Physics at Carleton.

20                   I'd personally like to start by thanking  
21 the CNSC having read some of the submissions from the  
22 community, and I want to thank you for working with us.

23                   As the Canadian regulator in the hospital  
24 and in the clinic, you work with the radiation safety team  
25 to ensure that in Kingston we provide a safe radiation

1 environment for patients and staff.

2 I particularly want to thank the members of  
3 -- and colleagues from your Class 2 and your Nuclear  
4 Substance and Radiation Devices Divisions who help us  
5 ensure that there is a safe environment.

6 Through your licensing activities, the CNSC  
7 has held us to high standards and worked with us to  
8 establish a very safe and appropriate use of radiation in  
9 patient care at the Kingston General Hospital. And I  
10 think without the CNSC to hold us to those high standards  
11 and to hold us to our licence, it would be more difficult  
12 to do so, so I thank you.

13 The objectives of this submission are to  
14 remind and inform the community of the role of the Chalk  
15 River Labs and the NRU in the supply of medical isotopes.

16 I will not repeat some of the discussions  
17 we've had from two of the intervenors already today who've  
18 talked mainly about nuclear medicine isotopes, but I want  
19 to focus primarily on the radioactive isotope, cobalt-60,  
20 which is often left out in the discussions of what's  
21 happening with the NRU.

22 I will not reproduce here our written  
23 submission. As you stated, it's there for everyone to  
24 read. I'll try to provide some additional background  
25 material.

1                   My students will be very interested to see  
2                   that I didn't provide PowerPoint slides. They're going to  
3                   rag me on this when I get back home.

4                   Why is it that cobalt-60 is not as  
5                   apparent? When the NRU went through its shutdown, there  
6                   was considerable media attention and reaction in the  
7                   community, specifically regarding Molybdenum-99.

8                   There was little said about cobalt-60, and  
9                   I suspect that that was because with the half-life of  
10                  cobalt-60 being about 5.3 years, the effects of the  
11                  shutdown were not as noticeable on the supply. Although  
12                  it is my understanding now that as they are harvesting  
13                  some new cobalt-60 from the reactor after the shutdowns,  
14                  they are seeing a lower specific activity because of the  
15                  shutdown.

16                  We believe that cobalt-60 is still of  
17                  importance today and it must be recognized in the further  
18                  discussions of the activities of the NRU.

19                  Cobalt-60 was a Canadian invention. It was  
20                  one of the first radioisotopes that was produced and sold  
21                  by the old NRX in 1949. In 1951, nearly 60 years to the  
22                  day, the first radiation patient was treated with cobalt-  
23                  60 treatment at the London Regional Cancer Centre, and  
24                  soon afterwards there were treatments also of cancer  
25                  patients in Saskatchewan and Saskatoon.

1           Cobalt-60 inaugurated the modern era of  
2 radiation therapy and helped establish high-energy  
3 radiation therapy as an important modality in the care of  
4 patients.

5           Cobalt-60 units were the workhorse in much  
6 of the world through the early 70s. They are still the  
7 main treatment unit through middle- and low-income  
8 countries, and over 2,000 units are presently operating  
9 throughout the world. There is a resurgence; I'll tell a  
10 little bit more about that later.

11           Just to remind you of the importance of  
12 radiation treatment, approximately 44 to 48 percent of men  
13 and women in Canada will personally encounter cancer in  
14 their lifetime. Half of these people, from current health  
15 services research, will benefit from radiation treatment  
16 at some point during their care, either for potential cure  
17 or for increasing quality of life.

18           Worldwide the need for stable radiation  
19 delivery is perhaps even more critical. The International  
20 Atomic Energy Agency and the World Health Organization  
21 have predicted that by 2015 to 2020 -- there are different  
22 predictions -- an estimated 5 to 10 million people in  
23 middle- and low-income countries will not have access to  
24 radiation treatment that they could benefit from. A low  
25 estimate of about 3,000 additional treatment units

1 required by the year 2015 has been projected to deal with  
2 the need that's coming out in the world.

3 In our work at the Cancer Centre, we have  
4 been investigating whether cobalt-60 has a role in  
5 developed countries and we have been investigating modern  
6 radiation approaches that we've learned in the clinic in  
7 the last 20 years and checking to see if they could apply  
8 to cobalt-60 radiation therapy.

9 And I'm very happy to report that we can do  
10 a sophisticated dose delivery with a cobalt-60 device as  
11 we could do with a linear accelerator, the standard in  
12 many clinics in the developed world.

13 So we believe that past experience in the  
14 world and the results of research by our group in Kingston  
15 and by a number of other groups worldwide, are indicating  
16 that cobalt-60 units are still an important part for  
17 radiation care.

18 Together with Best Industries, we have been  
19 able to advocate for improved devices being developed  
20 actually by the vendors, and we're very excited by joint  
21 projects we have with Best to improve the current state of  
22 cobalt therapy.

23 So cobalt-60 is a valuable medical  
24 radioisotope whose supply must be maintained.

25 Currently, the NRU here in Chalk River is

1 the only reactor in Canada producing medical-grade cobalt-  
2 60 at the high specific activity required for use in the  
3 treatment unit. Alternate sources for industrial cobalt-  
4 60 are available, but they are not suitable to produce the  
5 high-specific activities required in medical use.

6 The cobalt-60 source at Chalk River is a  
7 source of the majority of the medical cobalt-60 used  
8 worldwide.

9 We heard today that there are discussions  
10 and developments in alternate approaches to making other  
11 isotopes. Many of those accelerator-based approaches are  
12 not applicable to Cobalt 60, and the use of alternate  
13 reactors are not feasible at this time.

14 We believe that the importance of Cobalt 60  
15 radiation treatment throughout the world makes the  
16 maintenance of a secure Canadian source of Cobalt 60  
17 extremely important. Given the unique place of the Chalk  
18 River labs and the NRU and the production of Cobalt 60, we  
19 ask that the CNSC consider this an important component of  
20 their risk/benefit analysis as they review the licence  
21 application and generate an appropriate licence for  
22 continued activities of the NRU.

23 Thank you for your attention.

24 **MR. CHAIRMAN:** Thank you. Questions?

25 **MEMBER BARRIAULT:** Just one brief one.

1                   You mentioned that NRU is the producer of  
2 Cobalt 60, I guess nationally. Are they also involved in  
3 international market other than Third World countries?

4                   **DR. WASSENAAR:** Richard Wassenaar, for the  
5 record.

6                   Yes, for medical grade, what we use in  
7 tele-therapy, Cobalt 60 from the NRU. So through Best  
8 Theratronics is basically used worldwide. It's basically  
9 one of the only suppliers that -- the majority, the  
10 largest supplier there is currently.

11                  **MEMBER BARRIAULT:** Internationally?

12                  **DR. WASSENAAR:** Internationally.

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

15                  **MR. CHAIRMAN:** Can you elaborate a little  
16 bit? Because I thought, particularly all of the power  
17 plants -- the power Ontario Power Generation and Bruce  
18 Power can produce cobalt and is it -- can they make it  
19 with high activity or a specific activity, or is it just  
20 producing enough for the clientele?

21                  **DR. WASSENAAR:** Richard Wassenaar, for the  
22 record.

23                  It's true you can use the other reactors.  
24 So Nordion, in fact, uses the other reactors to produce  
25 some of their cobalt for their industrial radiography

1 business.

2 For the high specific activity, what you  
3 require is, first of all, something with high flux, a lot  
4 of neutrons, as well as a high capacity. So you can put a  
5 lot in. And currently the NRU is the only one that really  
6 meets that need. So there are other reactors that have  
7 the high flux, but don't have the capacity as well. So  
8 you need both of those together.

9 **MR. CHAIRMAN:** So a regular nuclear power  
10 plant that will exist right here -- a regular CANDU  
11 machine cannot do it, or is it not commercially attractive  
12 for them to do it?

13 **DR. WASSENAAR:** Right now, it's not  
14 commercially attractive and it would have issues trying to  
15 do it. We're currently looking at alternate supplies, of  
16 course. But like I said, the two things you need are high  
17 flux and high capacity and the NRU has both of those.

18 The other reactors that we would look at  
19 have maybe the same flux but a tenth of the capacity. So  
20 now instead of one reactor you need to go to 10 reactors  
21 to produce the same amount of cobalt to supply the world  
22 demand.

23 **MR. CHAIRMAN:** So what would you do if it  
24 was 2016 and they stopped producing it?

25 **DR. WASSENAAR:** It's an ongoing issue that

1 people haven't really looked at, but we have four years  
2 basically to solve it.

3 **MR. CHAIRMAN:** Okay, thank you.

4 Monsieur Harvey?

5 **MEMBER HARVEY:** Is the level of production  
6 of Cobalt 60 the same now that it was before the shutdown?

7 **DR. WASSENAAR:** Maybe I'll answer that  
8 first. Richard Wassenaar, again, for the record.

9 The Cobalt 60 that comes out of the reactor  
10 is at the same level. The problem of course was with the  
11 shutdown for a year these rods basically stick -- are  
12 stuck in the reactor, they sit there for three to five  
13 years before we pull them out, before there's enough  
14 Cobalt 60 produced.

15 So this is why we haven't seen the effect  
16 right away. It's a delayed effect. So we're now  
17 producing less cobalt because of that shutdown.

18 **MEMBER HARVEY:** I see, thank you.

19 **MR. CHAIRMAN:** Any other questions?

20 **MEMBER TOLGYESI:** To your knowledge, is  
21 there any potential future producers? Because you said we  
22 have four or five years, and in addition to four or five  
23 years, you know, because it's a long-term effect maybe we  
24 will have a year or two years additional. So what  
25 potential producers -- or alternative sources could be

1 available after 2016?

2 **MR. WASSENAAR:** So again, Richard  
3 Wassenaar, for the record.

4 There are other reactors that have the high  
5 flux. It's not simply a matter of finding one with  
6 sufficient flux because these rods go into the reactor  
7 themselves. So you have to worry about that, they're  
8 basically a moderator.

9 So you have to work with the power reactor  
10 to determine what you can put in and how that's going to  
11 affect everything within it. So it's a non-trivial matter  
12 to find a reactor that you can do this with. As well, you  
13 also need the capacity, and right now there aren't a lot  
14 of reactors that come close to the NRU in terms of how  
15 much cobalt you can make.

16 **MEMBER TOLGYESI:** What is -- did you --  
17 AECL, did you consider this question of Cobalt 60 or do  
18 you consider them in the future of -- future decisions of  
19 what will happen with the NRU?

20 **MR. WALKER:** Bob Walker, for the record.

21 As I had indicated earlier in response to  
22 another question, the use of the NRU for medical isotopes  
23 is a policy decision of the federal government and we as  
24 the Crown corporation will respond to that policy  
25 direction given.

1                   **MEMBER TOLGYESI:** I understand. My  
2 comprehension and understanding was that it was only Moly-  
3 99, you know? And that was one which was much easier to  
4 substitute, or to find alternative sources than for  
5 cobalt.

6                   **MR. WALKER:** Bob Walker, for the record.  
7 I thought the Nordion intervention did  
8 highlight the number of medical isotopes that are produced  
9 by the NRU. Molybdenum-99 is the highest volume, the  
10 Cobalt 60, a number of isotopes of iodine are also in the  
11 mix, and smaller numbers of very select isotopes as well.

12                  **MR. CHAIRMAN:** Okay. Just a very short  
13 question here. On your page 2 you mentioned that you use  
14 Cobalt 60 for a Cobalt 60-based Gamma Knife. This -- the  
15 Ottawa hospital just got a Gamma Knife, is that a cobalt-  
16 based Gamma Knife or is it a different Gamma Knife?

17                  **MR. SCHREINER:** There are two types of  
18 devices. So these are highly collimated beams that can  
19 treat small lesions in the brain. The two main  
20 technologies are the cobalt-based Gamma Knife, which uses  
21 about 200 cobalt sources in a collimated sphere. And the  
22 other machine is a CyberKnife, which is a linear  
23 accelerator type technology which is a linear accelerator  
24 at the end of the robot.

25                                   Depending on the type of facility you're in

1 and the medical professionals, the physicians who are  
2 driving the treatment, neurosurgeons tend to prefer the  
3 Gamma Knife, radiation oncologists tend to lean towards  
4 the CyberKnife. These guys -- it's a newer technology.  
5 But Cobalt 60 is still a major technology in that  
6 treatment.

7 **MR. CHAIRMAN:** So what did Ottawa just  
8 acquire?

9 **MR. SCHREINER:** They have a CyberKnife.

10 **MR. CHAIRMAN:** CyberKnife, okay. Thank  
11 you.

12 Anybody else? Okay. Thank you very much.

13 Do one more? Okay, we'll go one more  
14 before break.

15 While you're setting up I'll say that the  
16 next presentation is by the Canadian Nuclear Association  
17 as outlined CMD H7.9.

18 Ms. Carpenter, the floor is yours.

19  
20 **11-H7.9**

21 **Oral Presentation by the**  
22 **Canadian Nuclear Association**

23  
24 **MS. CARPENTER:** Good afternoon, Mr.  
25 President, Commission Members, and members of the local

1 community.

2 On my right-hand side I have with me today  
3 Ms. Heather Kleb, our Director of Regulatory Affairs, and  
4 on my left-hand side, Ms. Kathleen Olson, Director of  
5 Communications.

6 My name is Denise Carpenter; I'm the  
7 President and CEO of the Canadian Nuclear Association, for  
8 the record.

9 We're here today to speak on behalf of the  
10 71,000 people who work in Canada's nuclear industry.

11 Nuclear plays a critical, critical role in  
12 daily life of all Canadians, whether it is safe, reliable  
13 and affordable electricity from power plants in Ontario,  
14 Quebec or New Brunswick, uranium mining in Saskatchewan,  
15 advanced materials research for the aerospace industry in  
16 Manitoba and Quebec, or medical technologies across the  
17 country.

18 It is difficult to imagine an advanced  
19 technological society without nuclear technology. But our  
20 technology would not be possible without nuclear research.

21 Without research, our power plants would  
22 not -- would be unable to resolve operational issues.  
23 Advanced materials development would decline, and  
24 advancements in nuclear-based medical technologies would  
25 decrease.

1                   That's why the Canadian Nuclear  
2 Association, on behalf of all our members, asks that the  
3 Canadian Nuclear Safety Commission renew AECL's nuclear  
4 research and test establishment operating licence for the  
5 Chalk River Laboratories and the associated licence for  
6 dedicated isotope facilities.

7                   AECL's Chalk River Laboratories serve as  
8 Canada's national lab for nuclear science and technology.  
9 They provide the infrastructure and the expertise to  
10 support CANDU technology. They also provide the  
11 infrastructure and expertise to support material science  
12 research, medical radioisotopes development and  
13 production, not just for Canada, but for the world. And  
14 they are a key component of Canada's science, technology  
15 and manufacturing infrastructure.

16                  AECL's investment in nuclear science and  
17 technology is also aligned with several key goals of the  
18 Government of Canada.

19                  These include clean energy technologies to  
20 meet climate change goals, economic development and job  
21 creation, and strengthening Canada's science and  
22 technology infrastructure. So please allow me to  
23 elaborate.

24                  Regarding clean energy technologies to meet  
25 our climate change goals, nuclear energy is an important

1 part of Canada's clean energy portfolio as Canada and,  
2 indeed, the globe continues to struggle with the  
3 challenges from climate change.

4 In Canada, the electricity generated by our  
5 nuclear power plants currently avoids up to 90 million  
6 tonnes of greenhouse gases each year. Without the  
7 continued support of the Chalk River Laboratories, our  
8 power plants will be faced with the challenge of obtaining  
9 necessary support services from elsewhere, possibly  
10 elsewhere outside of Canada.

11 However, the impact will go far beyond  
12 Canada's borders. The nuclear research conducted at the  
13 Chalk River Laboratories not only supports operation and  
14 maintenance of CANDU reactors in Canada, but also in  
15 countries that have integrated the CANDU technology into  
16 their own low-carbon energy strategies.

17 These countries include India, Pakistan,  
18 China, Korea, the European Union as well as Argentina.

19 So regarding economic development and job  
20 creation, as in other advanced economies, Canada's  
21 government has a long history of investing in nuclear  
22 science and technology for very good reasons.

23 The work done at Chalk River Laboratories  
24 generates revenue in three important areas: contract  
25 services for isotope production; services to the CANDU

1 owners around the world; and services to the soon-to-be-  
2 established private sector company, CANDU Energy.

3 And we heard today that deal closed as of  
4 Sunday, October 2<sup>nd</sup>.

5 As a result, over the last 60 years, the  
6 Chalk River Laboratories have accumulated intellectual  
7 property assets and support AECL's science and technology  
8 products and services sales in Canada and worldwide.

9 Our science and technology supports  
10 material testing and product improvements in a wide range  
11 of industries, including natural resources development,  
12 advanced manufacturing such as aerospace and automotive  
13 manufacturing.

14 It is also necessary for the further  
15 development of medical technologies, including nuclear  
16 medicine and radiotherapy, but also advanced  
17 pharmaceuticals other than the radioisotope space  
18 diagnostics and treatment.

19 So there's a clear need to ensure that  
20 Canada will maintain its base of highly skilled  
21 professionals and sustain its advantage in science and  
22 technology innovation.

23 The Chalk River Laboratories employ  
24 thousands of highly trained staff and support a scientific  
25 community of 400 researchers from Canadian industry,

1 government and academia. More than 200 academic  
2 researchers from at least 20 Canadian universities use the  
3 Chalk River Laboratories on a regular basis.

4 No less important is the role of science  
5 and technology in the training of scientists and engineers  
6 in fields that go far beyond nuclear power generation.  
7 These scientists and engineers are highly-trained experts  
8 in fields as diverse as chemistry, metallurgy, materials  
9 engineering, health sciences, safety and accident  
10 investigation, and other areas of knowledge that depend on  
11 a solid understanding of radiation and nuclear sciences.

12 These specialists will work in industries  
13 that use radioactive materials and processes such as  
14 health care, environmental protection, food safety,  
15 national security, regulatory compliance and government  
16 policy.

17 But to maintain all of these benefits from  
18 nuclear science and technology for Canada's economy and  
19 for Canada's society, Canada -- and to protect Canada's  
20 role in the world, it is necessary to strengthen our  
21 science and technology infrastructure.

22 In recent years, AECL has initiated a  
23 number of government-funded improvement projects. For  
24 example, Project New-Lease was initiated in 2006 to  
25 revitalize the Chalk River Laboratories site and to ensure

1 compliance with the conditions of their operating licence.

2 Also in 2006, the Nuclear Legacy  
3 Liabilities Program was established to safely and cost-  
4 effectively reduce nuclear legacy liabilities and  
5 associated risks resulting from more than 60 years of  
6 research and development at the Chalk River Laboratories  
7 site.

8 More recently, in 2008, the isotope supply  
9 reliability program was established to address risks to  
10 the continued supply of medical isotopes.

11 In 2009, the strength of nuclear science  
12 and technology, to which Chalk River Laboratories are  
13 home, were put to test when the now 54 year-old NRU  
14 reactor was taken out of service following the detection  
15 of heavy water leak.

16 Something that hasn't been noted was to  
17 repair this leak, it was necessary to develop new repair  
18 technologies to fabricate and assemble new repair tools to  
19 address the specific operational issues thanks to the  
20 impressive efforts of the scientists, engineers and  
21 researchers at Chalk River Laboratories and within  
22 Canada's nuclear community.

23 The NRU reactor is in better physical  
24 condition today than it was licensed in 2006.

25 The ingenuity and resourcefulness shown

1       during that important project is a testament to the  
2       impressive collection of skills and experience at the  
3       Chalk River Laboratories and to how AECL would respond to  
4       any challenge that they or, indeed, our industry may face.

5               It also shows that AECL is more than  
6       capable of safely operating the Chalk River Laboratories  
7       now and into the future for the benefits of all Canadians.

8               Decades of public and private investment at  
9       the Chalk River Laboratories have created a concentration  
10      of human resources and technological facilities that will  
11      provide significant benefits to Canadians across the  
12      country for years to come.

13              They'll make it possible to provide rapid  
14      and creative solutions to any of the operational issues  
15      affecting the CANDU reactors in Canada and worldwide.

16              In closing, I'd like to remind you that the  
17      activities that take place under the Chalk River  
18      Laboratories program are focused on a single, unified  
19      strategic outcome for Canadians and the world to receive  
20      energy, health, environmental and economic benefits from  
21      nuclear science and technology with confidence; the  
22      nuclear safety and securities are assured.

23              And that's why we have AECL, and that's why  
24      we would like you to renew their licence as of today's  
25      hearing.

1                   **THE CHAIRMAN:** Thank you.

2                   Okay. Open for questioning. Questions?

3                   Okay, I'll start then. Let me start with  
4 an easy one.

5                   You heard about the kids' survey. I  
6 thought as a national organization you will give some  
7 comments about kids' perception and I think some Member  
8 asked about how it compares with general perception about  
9 the nuclear -- understanding of some of the nuclear  
10 activities.

11                  **MS. CARPENTER:** Yes, thank you for asking.  
12 Denise Carpenter, for the record.

13                  I'll make an opening comment and then turn  
14 it over to Kathleen Olson to further explain.

15                  First of all, I applaud the gentleman for  
16 doing the research. However, there is science behind  
17 research and there's methodology behind research and we  
18 have to, as a research community, respect the science and  
19 methodology of research.

20                  So my first question would obviously be,  
21 what was the methodology? How did we actually ask the  
22 questions and what methodology did we use? So that would  
23 be the start, so I'm looking forward to discussing that  
24 with him and working collaboratively with him to really  
25 delve deep into it.

1                   At the Canadian Nuclear Association, we  
2                   take pride in the research and the communications that we  
3                   do and the education programs.

4                   And with that, I'll turn that over to  
5                   Kathleen to share with you.

6                   **MS. OLSON:** Thank you.

7                   Kathleen Olson, for the record.

8                   As Denise just mentioned, we do manage a  
9                   high school education program at the Canadian Nuclear  
10                  Association. We have a program that's available to  
11                  teachers and endorsed and approved by all Ministries of  
12                  Education across the country, all provinces and  
13                  territories, and it's available to teachers to make  
14                  available as per their curriculum in high schools.

15                  A priority for us in 2012 is to review this  
16                  education program and really look at the uptake and where  
17                  we can collaborate with science coordinators of school  
18                  boards, for example, to ensure that our program is  
19                  reaching the intended audience because, of course, we can  
20                  make it available but we certainly can't influence how  
21                  many teachers use it and how often.

22                  So that's definitely something we want to  
23                  look at and, as Denise mentioned, we welcome a discussion  
24                  with Mr. Campbell and maybe that will help shed a little  
25                  bit of light on the two high schools that we discussed

1 here today in this region.

2 A general comment of communications at the  
3 CNA. We have a renewed program with a very strong  
4 emphasis on social media and with the sole purpose of  
5 engaging our youth, and we're quite proud of our efforts  
6 made this past year.

7 We have a significant and increasing rate  
8 of participation in talknuclear.ca. I'd encourage  
9 everyone to go and see it. It's a blog and from there we  
10 have a Facebook page and you can also access our Twitter  
11 account and a YouTube channel. So we're quite proud of  
12 those efforts and we're looking to increase those in the  
13 coming year.

14 **THE CHAIRMAN:** So you don't know really now  
15 what's the uptake of some of those school programs?

16 **MS. OLSON:** Kathleen Olson, for the record.  
17 We do have some numbers available to us in  
18 certain provinces and territories, but no, not nationally  
19 at this point specifically. We could go back and get  
20 those numbers, but it's all going to be part of a review  
21 that we do.

22 With other programs, as well, we have an  
23 annual conference every year in February in Ottawa where  
24 we, over the years, have brought in hundreds of students  
25 to attend our conference and network and meet folks in the

1 industry to help them with job prospects et cetera. And  
2 our member companies, of course, across the country take -  
3 - provide a lot of education programs and services.

4 So we, as an association, would like to do  
5 a review of all of those activities.

6 **THE CHAIRMAN:** Monsieur Tolgyesi?

7 **MEMBER TOLGYESI:** You know, if you would  
8 like to measure progress, you should have a kind of base  
9 data. So if you don't have that, it will be difficult to  
10 enable you to estimate what was an improvement or it's  
11 better or it's worse.

12 So do you have any kind of -- that type of  
13 basic data? The gentleman -- Mr. Campbell was saying that  
14 he did a survey. Mind you, we could discuss about  
15 scientific-based, scientific basis et cetera, but it was  
16 something, you know, probably if he's doing the same thing  
17 in a few years, he could measure what's a change.

18 Do you have any type of -- this type of  
19 data?

20 **MS. CARPENTER:** Absolutely. We have a  
21 five-year strategic plan that's based on scientific  
22 research in three different areas.

23 One is a mental model values-based research  
24 that we use to baseline stakeholders perceptions of the  
25 industry. Over the last year, we've actually fine-tuned

1       into four audiences where we've delved even deeper into  
2       people's attitudes and perceptions on how we can create a  
3       dialogue with them and how to open that door with  
4       dialogue.

5                   The whole communication strategy around CNA  
6       and our member companies is to create that dialogue, so we  
7       have a baseline there.

8                   We also have a baseline of polling of  
9       public perceptions which we did post-Fukushima and then we  
10      have a third web survey that was just completed in July.

11                  Those are our three baselines which we will  
12      measure ourselves against over the next five years.

13                  We've created a fairly simplified computer  
14      model that will take those three baselines and actually  
15      measure progress of programs, public perception and  
16      individual companies and the industry as a whole.

17                  **MEMBER TOLGYESI:** So could you share with  
18      us the kind of numbers or data from these baseline surveys  
19      what you did?

20                  **MS. CARPENTER:** Absolutely, but I can't  
21      share it right now. It's quite complicated. I can't just  
22      pull one number out of the air. I'd have to do a summary,  
23      but I'd be happy to provide that.

24                  As a matter of fact, the CNSC have been  
25      provided copies of several of that information as we've

1           been doing it.

2                           If there's a specific question, I can give  
3           you a ballpark and a range of it.

4                           **MEMBER TOLGYESI:** I will give you one.

5                           **MS. CARPENTER:** Sure.

6                           **MEMBER TOLGYESI:** What's the awareness of  
7           youth regarding nuclear?

8                           **MS. CARPENTER:** So what I can tell you is  
9           that the awareness of women in Ontario of nuclear science  
10          and nuclear health and how it affects their lives and  
11          their children's lives is about 50 percent. But I also  
12          know that we have to talk to them about how it affects  
13          their daily lives and the health and the opportunity for  
14          their children. Then we can start talking about the  
15          science and the generation of it.

16                           So that's the type of research we did that  
17          will allow us to have dialogue with people. So that would  
18          be as close an answer as I can give you specifically on  
19          youth.

20                           On the youth side, as Kathleen indicated,  
21          we've been mandated to review all education programs by  
22          the industry in 2012 and come back with a recommendation  
23          to our board of directors as to how to best utilize the  
24          funds within the industry to actually break the barriers  
25          of communications with youth.

1                   **MEMBER TOLGYESI:** Probably next time when  
2 you have an opportunity to come in front of us, you could  
3 have a kind of presentation on what's the resumé of this  
4 data.

5                   **MS. CARPENTER:** We'll be happy to provide  
6 that, sir.

7                   **THE CHAIRMAN:** Anything else? Anybody,  
8 question?

9                   Okay, thank you very much. That's a good  
10 time now to break for 15 minutes. We'll be back at  
11 quarter to four. Thank you.

12

13 --- Upon recessing at 3:28 p.m. /

14                   L'audience est suspendue à 15h28

15 --- Upon resuming at 3:45 p.m. /

16                   L'audience est reprise à 15h45

17

18                   **MR. LEBLANC:** So the next presentation  
19 listed on the agenda was from Mr. Eugene Sokolov as  
20 outlined in CMD 11-H7.12.

21                   We were informed that Mr. Sokolov is unable  
22 to attend the hearing today so we will get back to his  
23 submission -- one concerning the written submissions after  
24 the oral presentations.

25

Thank you.

1                   **THE CHAIRMAN:** Okay, so our next submission  
2 is an oral presentation by the Concerned Citizens of  
3 Renfrew County as outlined in CMD 11-H7.13 and 7.13A and  
4 7.13B.

5                   And I understand that Dr. Hendrickson will  
6 make the presentation. Please proceed.

7  
8                   **11-H7.13 / 11-H7.13A / 11-H7.13B**

9                   **Oral presentation by**  
10                  **Concerned Citizens of**  
11                  **Renfrew County**

12  
13                  **DR. HENDRICKSON:** Thank you, Mr. President,  
14 Members of the Commission for the opportunity to present  
15 today.

16                  In the view of the public, we want to see  
17 the Commission give highest priority to protection of  
18 local citizens and the Ottawa River. Health and safety of  
19 Canadians and the environment should be paramount in all  
20 licensing issues before the Commission.

21                  We have a number of recommendations. I  
22 can't go through them all, but I would like to start with  
23 our very first one which has to do with a topic that's  
24 already come up; the complexity of the issues that face  
25 the Commission with regard to this licensing application.

1                   And we've suggested that consideration be  
2                   given to separating this licence application into  
3                   considerations regarding the NRU reactor, the isotope  
4                   production activities at Chalk River and the waste  
5                   management areas and other waste management activities.  
6                   And I think some of the discussions here today have borne  
7                   out why this is worth giving consideration.

8                   I would note that for other licensees,  
9                   waste management areas are addressed in separate hearings  
10                  from, say, power reactors.

11                  A second issue has to do with the length of  
12                  the licence, particularly for the NRU reactor. We just  
13                  don't think five years makes sense. We've heard about the  
14                  fitness for service issues; fitness for service issues are  
15                  also environmental issues, of course.

16                  And given the age, history, lack of  
17                  complete characterization of the vessel to date; we really  
18                  think that this should be a shorter licensing period for  
19                  that -- this key aspect of the facility at Chalk River.

20                  We have a number of suggestions that we  
21                  can't go into detail about how we would like to see the  
22                  NRU treated in that sort of licensing discussion.

23                  Another issue that briefly has -- but has  
24                  come up quite a bit in the wake of Fukushima is we've  
25                  suggested a -- that nuclear workers actually study past

1 nuclear accidents at a range of facilities and really  
2 starting way back with Chalk River and the NRX accident  
3 back in 1952 and there have been quite a number of other  
4 serious accidents since then.

5 And, you know, we should learn from the  
6 history of those accidents and people in the nuclear  
7 industry should be expected to know what went wrong and  
8 it's somewhat troubling, I think, that we still are seeing  
9 additional accidents and particularly Fukushima is very  
10 much on the minds of the public and it is a source of  
11 concern.

12 Another issue for the public is clearly the  
13 tritium emissions from the Chalk River facility and that's  
14 both emissions into the Ottawa River and through the NRX -  
15 - NRU reactor stack. Are there ways -- are there  
16 technical ways that these tritium emissions could come  
17 down further? Tritium oxide is an internal beta emitter;  
18 it gets into peoples' bodies; it gets into organic forms.  
19 I know that the CNSC has done some work on this, but it is  
20 a concern for the public.

21 Another real issue that I've raised many  
22 times in the past, personally, is the issue of reporting  
23 in scientific units for the emissions from this facility.  
24 I strongly urge you to consider that model doses and  
25 percentages of derived release limits are not -- do not

1       constitute environmental data.

2                   What we're looking for -- and I think what  
3       the public is entitled to receive -- are measurements in  
4       SI units such as becquerels per litre.  Whether it's  
5       tritium or gross beta, I think it really makes for a much  
6       better informed discussion when we have actual numbers  
7       rather than model doses.

8                   We've talked in past interventions about  
9       the CNSC requiring AECL to completely map all the  
10      radioactive waste materials, where are the plumes and so  
11      forth.  I know that's actually been done, but the problem  
12      is it's not been made public.

13                  So I think that the CNSC probably has that  
14      information.  Certainly AECL is doing a very good job of  
15      monitoring and mapping plumes, but they're not very --  
16      there's still a resistance to make that kind of  
17      information available to the public.

18                  And this becomes particularly important in  
19      the context of the Nuclear Legacy Liabilities Program  
20      where large sums of public money are being invested in  
21      remediation activities.  We've called for a panel review  
22      in terms of the environmental assessment process in the  
23      past and I think it's safe to say that there are  
24      deficiencies in terms of public input into the Nuclear  
25      Legacy Liabilities Program and that the CNSC does have

1           responsibilities in this regard.

2                           One of the more -- so in a -- I want to  
3 point out that we have a couple supplementary submissions  
4 and one talks about toward a healthy regulatory culture.  
5 One of the points that we make very strongly in there has  
6 to do with the ALARA principles, lowest reasonably  
7 achievable.

8                           And let's not forget that from the point of  
9 view of the public, it is what happens -- what leaves the  
10 Chalk River site that really matters and that's where it's  
11 very important for the public that the emissions --  
12 whether they're into the river or into the air -- be as  
13 low as reasonably achievable.

14                           We think that there's very good work and  
15 very important work in terms of cleaning up what's  
16 happening on the site, but it -- but the primary concern  
17 of the public is what gets off the site and that's where  
18 ALARA is an extremely important principle and I -- it's  
19 not even been mentioned today. So I think that's  
20 something to keep in mind.

21                           I was fortunate enough to attend a  
22 conference organized by the Canadian Nuclear Society on  
23 waste management decommissioning and environmental  
24 restoration for Canada's nuclear activities. It took  
25 place very recently in Toronto. And a large number of the

1 presentations at that conference had to do with the Chalk  
2 River facility.

3 In our second supplementary submission, we  
4 cover some of the -- some of our conclusions based on what  
5 we heard at that conference. And I think that probably the  
6 most important one has to do with the NRX fuel bay plume  
7 and although I know the source of that plume is gone --  
8 the old fuel bay has been dewatered -- there still are  
9 major amounts of radioactive contaminants that are moving  
10 through the active area and into the Ottawa River.

11 There are large amounts of strontium-90  
12 entering the river. Seepage rates where that plume  
13 contacts the river are very high, on the order of --  
14 something like if there were three centimetres of rainfall  
15 coming down a day with 590 becquerels per litre of  
16 strontium; that's a lot.

17 And we have the Nuclear Legacy Liabilities  
18 Program, we'd like to see some action to make those  
19 strontium emissions as low as reasonably achievable.

20 There's also the problem of leakage from  
21 the NRU fuel bay; again, great progress in terms of  
22 reducing the amount there, but there is a plume there and  
23 there's a question of remedial activities associated with  
24 that plume.

25 Fragments of the NRX reactor fuel rods are

1 deposited in the Ottawa River near the process sewer  
2 outfall. We've given that a lot of thought and our view is  
3 that those should be removed. Now, we are aware that  
4 there have been technical workshops to look at that  
5 question. We haven't seen the results of those.

6 Clearance of waste: In previous hearings,  
7 I have raised the problem of the 2008 amendments to the  
8 Nuclear Substances and Radiation Devices Regulations which  
9 introduced the clearance levels. While these are being  
10 widely applied by licensees now, the public must be  
11 provided with evidence that low-level nuclear waste are  
12 not being sent to facilities not licensed to accept waste  
13 and we know that a lot of the waste from Chalk River are  
14 going to our Ottawa Valley Waste Recovery Centre.

15 So how do we know? What sort of assurances  
16 does the public have that nuclear waste isn't ending up in  
17 our land -- in our waste management or waste recovery  
18 centre?

19 I did want to mention the question of  
20 feasibility of a geologic waste management facility. This  
21 has been discussed at the conference in Toronto and in the  
22 context of long-term management of wastes at the Chalk  
23 River site, particularly some of the liability wastes.

24 We listened very closely to the  
25 presentations there which discuss, I think, what most

1 geologists are aware there is a high degree of faulting.  
2 There are -- this general area is seismically active.  
3 There are many fractures in the boreholes that have been  
4 sunk at that site. We just think this kind of -- there  
5 are high levels of microbial activity. There's a strong  
6 indication that a rock cavern is not an acceptable option  
7 for long-term management of waste at the Chalk River site.

8 A few concluding points have to do with  
9 categorization and characterization of the waste,  
10 particularly things like the legacy liquid waste. This  
11 has come up briefly, but we do need to see plans and a  
12 timetable for dealing with these under the Nuclear Legacy  
13 Liabilities Project. We'd like to know levels of  
14 activity, what are the isotopes involved.

15 And, finally, just to emphasize that there  
16 seems to be some lack of clarity about the role of the  
17 Canadian Nuclear Safety Commission as a responsible  
18 authority for environmental assessments of projects that  
19 are funded by the Nuclear Legacy Liabilities Project.

20 Again, at the conference in Toronto, we  
21 heard that the CNSC may be a responsible authority. The  
22 Natural Resources Canada and AECL may all have some  
23 responsibilities under the Canadian *Environmental*  
24 *Assessment Act*.

25 How are efforts to make sure that all this

1 public money, which is going into remediation, 70 percent  
2 of Canada's nuclear legacy liabilities are Chalk River.

3 So we think that it's incumbent upon the  
4 different organizations, the different government agencies  
5 and Crown Corporations that have responsibility for this,  
6 to work together and provide very clear guidance in terms  
7 of how the public can be involved in these environmental  
8 assessments, and also probably better technical oversight  
9 and involvement of independent scientists in looking at  
10 this important exercise that's being led under the Nuclear  
11 Legacy Liabilities Project.

12 Thank you.

13 **THE CHAIRMAN:** Thank you.

14 You give us a lot of things to think about.

15 Why don't I start by first having AECL and  
16 CNSC take a reply before opening it up for Commissioners?

17 So why don't we start maybe with AECL? You  
18 want to comment? You don't have to comment. Do you want  
19 to comment on the intervenor?

20 While they're pondering, CNSC, actually,  
21 you're ready to ---

22 **MR. JAMMAL:** For the record, Ramzi Jammal.

23 I will start, sir, and will pass it on to  
24 my colleagues.

25 With respect to the recommendations and the

1 presentation made by the intervenor, some of the  
2 information is already being applied as part of our  
3 licensing process. And one of -- in his submission, he  
4 calls for the lessons learned from Fukushima.

5 I would just like to inform the public and  
6 the intervenor that a task force was put in place at the  
7 CNSC to review the lessons learned at Fukushima, and they  
8 will be producing a recommendation; the lessons learned,  
9 short-term actions. Closures to the short-term actions  
10 have been already addressed in specific to the NRU site.

11 Our inspectors, as we discussed this  
12 morning, verified the short-term actions.

13 You tell me if I'm going into too much  
14 detail because we're going to address the recommendations  
15 a bit globally and then we'll go in specific if the  
16 Commission would like more details.

17 In addition to the CNSC task force, the  
18 CNSC is having a follow-up mission by international  
19 community on the implementation of the previous  
20 verification that was done in 2009. And in this review,  
21 there was a specific module or a documentation review to  
22 the response to Fukushima by the CNSC as a regulator and  
23 where do we stand on the international scene.

24 So the call for the review of the "stress  
25 test" from Canadian perspective is complete, is being

1 carried out. And for the information of the intervenor  
2 and the public here, that the CNSC will be the first  
3 regulator in the world to conduct a public hearing with  
4 respect to the findings of the Fukushima report that will  
5 be addressed to me by the task force. And then we'll have  
6 the input from the public with respect to the hearing  
7 process.

8 As for the inventory, I would just like to  
9 go back and I've got copies of our regulations, the CNSC  
10 regulations, that clearly states no licence will be  
11 issued, no application will be validated and regulatory  
12 oversight with respect to quantity, name, volumes,  
13 tracking of the nuclear substance, radioactive substance.

14 With respect to the overall declaration of  
15 putting in place an interim Becquerel-per-litre on the  
16 emissions.

17 I will pass it on Mr. Peter Elder that he  
18 can provide with the page, the section, the segment that  
19 requires AECL to report to. In addition to the annual  
20 report, we require under proactive disclosure in the same  
21 unit that we -- the intervenor is requesting, Becquerels  
22 per litre for the emissions, and we follow the  
23 international practice with respect to the emissions, with  
24 respect to the derived limits. And we don't stop at the  
25 derived limits.

1                   In our radiation protection regulation, we  
2 put in place what we call an action level, an  
3 administrative level, which is a fraction of the public  
4 dose limit, which is an indicator from CNSC perspective on  
5 how the facilities operate.

6                   With respect to the Nuclear Liability  
7 Program, I will pass it on to our colleague from NRCan,  
8 Dr. Thompson, with respect to the environmental assessment  
9 and issues.

10                   I will stop here. I'll pass it on to Mr.  
11 Elder.

12                   **MR. ELDER:** Just quickly in terms of the  
13 reporting, we agree that it will be in SI units. Our  
14 licence conditions handbook has, I think, on page 250 --  
15 246 to 251 all the action levels and release limits in  
16 Becquerels, you know, in the appropriate unit, but  
17 anyways, it's Becquerels or not as a percentage.

18                   Two things I'd like to touch on just  
19 briefly at this time is the issue of one licence versus  
20 multiple licences.

21                   We have standard areas that we rate and  
22 look at. My count is 9 out of those 14 are common across  
23 the site, including radiation protection, environmental  
24 protection. And we have had difficulties in sites where  
25 there's separate licensing presenting the full picture to

1 the Commission if you present one facility versus another  
2 one.

3 So, actually, for the waste facilities at  
4 the power plants, we have been going the other way of  
5 rolling the waste facilities in. We just recently did  
6 this in Gentilly-2, and we've done it earlier at Point  
7 Lepreau.

8 We believe that you need to see the whole  
9 picture even if it is a very complex picture that you  
10 can't -- seeing part of it is very hard to figure out  
11 what's going on, recognizing that it can be difficult to  
12 explain in some cases.

13 The other one is on the length of licence.  
14 We started working on this licence renewal in 2008. It's  
15 been three years of effort to get us here to make sure  
16 that we've got a properly documented and understood  
17 licence and the licence conditions handbook.

18 We did extensive review of -- required  
19 extensive review of NRU that looked forward 10 years into  
20 the future, to make sure that if we were recommending 5  
21 years that we would understand what happens after those 5  
22 years.

23 So having done all that work to set up for  
24 five years to make sure that we've got very clear rules,  
25 very clear understood situation and understand what needs

1 to be done, what you get from a shorter licence, frankly,  
2 is a big administrative burden. And it would be very  
3 difficult to review all this stuff again.

4 We're spending all the time reviewing our  
5 licensing documentation rather than doing what I would  
6 prefer to do, is making sure that there is progress on  
7 things like the NRU improvements, on getting rid of the  
8 FISST tank.

9 These are things that are priorities for  
10 us, and we need to make sure that we've got staff time to  
11 follow up and do inspections and verification.

12 It's a question of balance on where you put  
13 your effort. The shorter licence, the more you spend on  
14 licensing and verification and compliance. We think a  
15 five year in this case is the proper balance.

16 **THE CHAIRMAN:** AECL?

17 **MR. LESKO:** Randy Lesko, for the record.

18 Perhaps I would ask Joan Miller, our vice  
19 president of decommissioning and waste management, who's  
20 responsible for our Nuclear Legacy Liability Program, as  
21 well as our day-to-day operations with respect to waste  
22 management.

23 So I'll let Joan comment on the  
24 presentation we've made today.

25 **MS. MILLER:** Joan Miller, for the record.

1 Thank you, Randy.

2 There were a number of comments expressed  
3 about the Nuclear Legacy Liability Program, so I'll try  
4 and give an overview in terms of our approach to the  
5 program.

6 It is based on a 70-year schedule that  
7 takes us through to the decommissioning, complete  
8 decommissioning of the Chalk River site. The program was  
9 put into effect in 2006 and it is based on a comprehensive  
10 preliminary decommissioning plan for the site.

11 That document includes a lot of the  
12 information that was referred to by the intervener,  
13 perhaps not in the level of detail that they would like to  
14 see, but a lot of that information is in the document, and  
15 it has been posted on our web site. We have just revised  
16 that document and the revision will be updated to our --  
17 or, posted to our web site shortly.

18 When we look at priorities, when the  
19 program was initiated we needed to address sort of the  
20 highest priority health and safety items, so those  
21 projects proceeded as independent projects, and many of  
22 those projects did go through an environmental assessment  
23 process which they were either posted for public comments  
24 or, for some projects, indeed, open houses were held, to  
25 communicate to the public, or allow the public an

1 opportunity to ask questions and to find our more about  
2 those specific projects.

3 The priorities, we do review the priorities  
4 of the program on an annual basis or bi-annual basis, and  
5 the priorities can be adjusted. They are based on our  
6 overall operational and performance monitoring of the  
7 site, of the environmental monitoring program, the waste  
8 management area performance, et cetera, so we can adjust  
9 the priorities.

10 For the actual remediation activities, we  
11 do follow best practices in terms of our approach. There  
12 are best practices defined by the EPA, for example. There  
13 are best practices defined for the clean-up of federal  
14 contaminated lands. So we approach our mediation  
15 activities in much the same way, starting with  
16 characterization, going through a detailed risk  
17 assessment, and then coming up with the appropriate  
18 solutions based on the necessary information from a risk  
19 assessment.

20 With respect to communicating the program,  
21 we did in May of 2010 hold three open houses in the local  
22 communities, three different communities. Those open  
23 houses were well-advertised in the local newspapers, on  
24 the radio, and we did have some participation by the  
25 public at those open houses.

1                   We supplement our program also by -- we  
2                   have a web site specifically for the program, and there is  
3                   information that is updated and provided to that web site  
4                   on a regular basis.

5                   As well, you heard earlier that one of our  
6                   main communication vehicles is the Environmental  
7                   Stewardship Council, and the Nuclear Legacy Liabilities  
8                   Program has a regular update to those meetings.

9                   We provide both overviews of the programs,  
10                  so, for example, as we were planning the next three-year  
11                  program, we provided Council members with an update of the  
12                  program plans, the basis for what we were putting forward.  
13                  The last meeting, I just went through the details of the  
14                  projects that we would be undertaking in this upcoming  
15                  three years.

16                  And, as well, we provide very specific  
17                  projects, so, for example, the Ottawa Riverbed Remediation  
18                  project, it is presented in detail annually to the Council  
19                  and we'll continue to take select projects and present  
20                  them in that way.

21                  As well, for this phase of the program,  
22                  we're working with Natural Resources Canada and developing  
23                  a more comprehensive public consultation framework for the  
24                  program going forward. That -- we're just fine tuning  
25                  some of the details. Again, we would use probably the

1 Environmental Stewardship Council to review that framework  
2 with them, to get their input, before we take it out into  
3 the broader community.

4 And I think that's all I'll say for now. I  
5 think I've addressed most of the topics that were raised,  
6 but, if not, I'm open to answering specific questions.

7 **THE CHAIRMAN:** Okay. I think it's now up  
8 to the Commissioners. Who wants to go first? Dr. McDill?

9 **MEMBER McDILL:** Thank you.

10 Well, I'll start with maybe one of the  
11 easier ones. My recollection was back in, I think, when I  
12 first joined the Commission, we were -- we, as a  
13 Commission, were asking for a big picture licence for CRL  
14 because of the complexity of one part interfering with  
15 another, and trying to deal with pieces. I'm correct on  
16 that recollection? I believe staff was also interested,  
17 but that is historically correct?

18 **MR. ELDER:** Yes. I'm Peter Elder. Yes,  
19 that's correct, yes.

20 **MR. JAMMAL:** For the record, I'm Ramzi  
21 Jammal.

22 You're correct, Dr. McDill, and because the  
23 programs are not activity-specific, because they are  
24 programs that are site-specific programs -- and by putting  
25 this holistic horizontal approach, is applying -- the

1 programs will be applied for the activities.

2 **MEMBER McDILL:** Thank you.

3 With respect to the intervener's comment on  
4 low-level waste going into normal municipal landfills,  
5 what is the procedure that prevents that from happening?  
6 Presumably by accident, not intentionally.

7 **MR. LESCO:** Dr. McDill, it's Randy Lesco,  
8 for the record.

9 Perhaps I could ask Joan Miller to respond  
10 to your question?

11 **MS. MILLER:** Joan Miller, for the record.

12 We have a very formal waste management  
13 program that incorporates all the aspects of our  
14 environmental policy: commitment to pollution prevention,  
15 commitment to meeting all the applicable regulations and  
16 standards, and also to minimize the nuclear legacy  
17 obligations for future generations.

18 So what that means is that we apply the  
19 pollution prevention techniques of prevention, reduction,  
20 reuse and recycle, to the wastes that are produced on the  
21 site.

22 We have a very formal program related to  
23 segregation of waste, and wastes that are identified to be  
24 clean, so that would be wastes that are produced in our  
25 office waste, in our Controlled Area 1, in our normal

1 office buildings, cafeteria, et cetera, areas where we  
2 know there is no radiation -- radioactive contamination.  
3 That clean waste is either recycled or put into the on-  
4 site landfill.

5 We then have some waste that we identify as  
6 likely clean. So to identify that waste, we first do a  
7 very detailed assessment of the materials that are used  
8 within that particular building or that particular  
9 facility. We look at their operational controls and  
10 determine that areas within that building, or that  
11 facility, could be designated as likely clean. So, for  
12 example, waste from offices within our Controlled Area 2.

13 So that waste is designated as likely  
14 clean; it goes out to our waste analysis facility where we  
15 can determine that, in fact, the waste meets the clearance  
16 levels identified in the regulations and, if it meets the  
17 clearance levels, then it is sent off for recycling --  
18 although, I should say that it has to go through one more  
19 monitor. We do put it through a truck monitor as well  
20 before it leaves the site, and if it is waste that needs  
21 to go to a landfill it will generally go to our landfill  
22 on-site that has been confirmed to be clean.

23 **MEMBER McDILL:** I think staff had something  
24 they wanted to add?

25 **DR. THOMPSON:** Patsy Thompson, for the

1 record.

2 I wanted to add some information on how the  
3 clearance levels that are found in the CNSC regulations,  
4 where they come from and how they were developed.

5 Essentially, the CNSC adopted the IAEA  
6 clearance levels that are in safety guides for  
7 incorporation into our regulations. The clearance levels  
8 have been developed for -- essentially, for use under  
9 certain conditions, and those conditions are reflected in  
10 other uses in Canada.

11 They were developed on the basis of very  
12 conservative assumptions as to what could be done with the  
13 material that is cleared from regulation, and it  
14 corresponds to -- with exposure scenarios that are very  
15 conservative, to very low doses in the few microsieverts.  
16 And so on that basis the material is considered to be  
17 safe, and not needing regulatory control, and it is  
18 cleared from regulation so it can be sent to outside  
19 facilities like landfills and recycling.

20 **MEMBER McDILL:** And do not many landfills  
21 and recycling centres have a further check for incoming  
22 trucks?

23 **DR. THOMPSON:** Patsy Thompson, for the  
24 record -- you're correct.

25 There is -- there are monitors with alarms

1 to -- as an additional check to make sure that  
2 contaminated material is not put into a landfill.

3 **MEMBER McDILL:** Does that address the  
4 intervenor's question?

5 **MR. HENDRICKSON:** There are radioisotopes  
6 of a concern that cannot be easily detected with monitors.  
7 Of course, tritium would be one of those, that's a low  
8 energy beta.

9 I mentioned it in my intervention and that  
10 would be one of the areas of concern, is how thoroughly  
11 can the waste be checked before -- say contaminated paper  
12 towels, that sort of thing -- might leave the site?

13 **MEMBER McDILL:** I'll pass it back to AECL.

14 **MR. LESCO:** Randy Lesco, for the record.  
15 I'd ask Joan Miller to respond to your  
16 question.

17 **MS. MILLER:** Joan Miller, for the record.

18 As I mentioned earlier, we would take waste  
19 from operations where we know that we can indeed confirm  
20 that the material -- well, first is that it is likely  
21 clean, and then that we can confirm that it is clean and  
22 meets the clearance levels.

23 **MEMBER McDILL:** So hypothetically speaking,  
24 if an enormous spill of tritiated water were cleaned up  
25 with paper towels, that would not be considered clean?

1                   **MS. MILLER:** Joan Miller, for the record.  
2                   No, it would not because it would not be  
3 considered to be likely clean.

4                   **MEMBER McDILL:** Thank you. My next  
5 question is with respect to the replacement -- the  
6 intervenor's suggestion, recommendation number eight,  
7 replacing the vessel.

8                   I think we discussed that a couple of years  
9 ago, but for the record, and since the recommendation is  
10 on the record; perhaps AECL could revisit that brief  
11 discussion?

12                   **MR. LESCO:** Randy Lesco, for the record.

13                   When we made the decision to repair the  
14 reactor vessel, it was clear this was the shortest time to  
15 get the reactor repaired and up and running. You have to  
16 realize that back in 1972 when the vessel was replaced, it  
17 took two years.

18                   That does not include any time for  
19 fabrication or manufacturing of a new vessel, nor does it  
20 include any time for doing mock-ups and preparations in  
21 preparing for a replacement vessel.

22                   So clearly the timelines associated with  
23 actually replacing the vessel would probably be in the  
24 order of four years, roughly.

25                   **MR. CHAIRMAN:** Just to be clear however,

1 that is a policy decision of the government, is that  
2 correct?

3 It is not something -- given the complexity  
4 and the implication and the cost; this is not going to be  
5 the laboratory decision. Could you on your own decide to  
6 replace it?

7 **MR. WALKER:** Bob Walker, for the record.

8 The President is correct. We would make  
9 recommendations to government through Natural Resources  
10 Canada, but ultimately the decision to proceed would be  
11 one made by government.

12 **MR. CHAIRMAN:** Thank you. Dr. McDill?

13 **MEMBER MCDILL:** Two more questions and then  
14 I'll pass it on.

15 **MR. CHAIRMAN:** Sorry, we have a hand waving  
16 of a staffer.

17 **MR. ELDER:** Sorry, Peter Elder, for the  
18 record.

19 I think we would like to add on this one  
20 just to say while we've noted that in terms of from a  
21 safety perspective, we made this very clear when we  
22 recommended that they be allowed to restart the vessel, is  
23 that the vessel has been repaired to be fit for duty.

24 However -- and there have been significant  
25 condition assessments done on the vessel. We also made it

1 clear that one of the issues of that, it's been repaired  
2 to code, but the code also requires that you do the  
3 ongoing inspections.

4 So I mean, as long as the inspections are  
5 done and the inspections will need to be continued and  
6 done to confirm that the vessel remains, we have no  
7 concerns about the vessel.

8 It's very well characterized and our issue  
9 is to make sure those inspections get done. And -- but we  
10 have no concerns in the short term or long term about the  
11 vessel and repair.

12 **MR. CHAIRMAN:** Well, then I've been dying  
13 to ask this question for a long, long time. So now that  
14 you know -- that AECL knows how to repair it and solder  
15 and weld it, then there's no life limit, you can keep it  
16 running forever theoretically?

17 Because somewhere along the line somebody's  
18 going to ask how long is this -- is there a shelf life for  
19 this vessel?

20 **MR. LESCO:** Randy Lesco, for the record.

21 Currently, as we move forward, there is  
22 going to be somewhat of a cost trade off in terms of cost  
23 benefit, in terms of what is it going to take to continue  
24 on, in terms of repairing the machine versus its end of  
25 life, so to speak. One of the important programs that we

1 put in place is the Integrated Improvement Plan, right?  
2 To ensure that we can continue on with safe and reliable  
3 operation.

4 The basis for that integrated safety  
5 review, or Integrated Improvement Plan was based on the  
6 premise of a 10-year operation. And so as we continue  
7 forward through that program, we would look at  
8 prioritizing and planning those issues that should become  
9 emergent through our inspections, as an example.

10 **MR. CHAIRMAN:** Thank you.

11 Dr. McDill, I interrupted you.

12 **MEMBER MCDILL:** Not at all. I think Mr.  
13 Jammal had something he wanted to say.

14 **MR. JAMMAL:** For the record, Ramzi Jammal.

15 The shelf life of the vessel is always  
16 related to the safety case and its safety components --  
17 not components -- but its safety condition. And as Mr.  
18 Elder mentioned, the fact that the condition assessment  
19 had been carried out and from our perspective it doesn't  
20 matter if it's a new vessel or an existing vessel, as long  
21 as it's safe, we'll allow it to operate.

22 **MEMBER MCDILL:** Thank you. My next  
23 question I wonder if I could ask both AECL and staff to  
24 briefly talk about the FISST tank and where we are now,  
25 and where we're going?

1                   **MR. LESCO:** Randy Lesco, for the record.  
2                   I'd ask Joan Miller to respond to your  
3 question.

4                   **MS. MILLER:** Joan Miller, for the record.  
5                   The FISST tank is one of the identified  
6 legacy liquid tanks that we have onsite. We have for the  
7 last few years been looking for solutions to deal with 21  
8 of those tanks.

9                   I'm pleased to say that we have indeed  
10 dealt with seven of them to date. The liquids have been  
11 removed and they've been processed through our waste  
12 treatment centre. So we now have 14 remaining tanks. One  
13 of those is the FISST tank.

14                   The current course of action is that we  
15 will -- and our reference project is that we will use  
16 mobile cementation and cement the liquid in all of those  
17 tanks including the FISST tank. This technology has been  
18 recently used with similar sorts of liquids in other  
19 countries, and we are using some of those other --  
20 individuals from those other countries as subject matter  
21 experts to help us proceed with that project.

22                   We are -- we do continue to look at  
23 alternatives for the FISST tank, however, because it is --  
24 does have some unique characteristics. But it is included  
25 in our reference strategy. Our current plan is that all

1 of the tanks would have the liquids removed by 2020. I  
2 say current plan. One of the things that we've just  
3 recently done is gone out to the marketplace to look at  
4 potential schedules that suppliers could give us with  
5 respect to designing the necessary equipment and then  
6 assisting us with emptying the tanks.

7 So we recognize that it is a high priority,  
8 we'd like to advance the schedule and we'll be working  
9 with the external suppliers to see what we can do to  
10 better that schedule. But that's our current plan.

11 **MR. ELDER:** Peter Elder, for the record.

12 I'm just checking this is our protocol for  
13 the Nuclear Legacy Liabilities Program, which you  
14 mentioned is on our website. Doing something about the  
15 FISST tank is one of our things that we would like done in  
16 this licence period whether it's fully, but to have that  
17 fully done would be preferable, but certainly have a firm  
18 decision on how they are going to do it and we've got that  
19 in -- within the next two years is our decision points on  
20 what's going to be done on that so we can move forward.

21 If it's segmentation or if it's another  
22 port on that one, so the other option actually is whether  
23 you can repatriate that material to the United States in  
24 some or another. So we are tracking this. It's part of  
25 the ones that we put into the protocol and part of the --

1 one of the major things we would like to see the Nuclear  
2 Legacy Liabilities Program address over the next licence  
3 period.

4 So we can give you a copy of the protocol  
5 if you want, but it's ---

6 **MEMBER MCDILL:** Thank you. Within the  
7 licence period was what I was looking for.

8 One more comment: Mr. Hendrickson, you put  
9 an awful lot of time in this, and I appreciate it. I  
10 wonder if you do a context for this supplementary  
11 intervention at another time. It was very difficult to  
12 follow in your summary of sort of points that came out of  
13 the conference. It was difficult to follow, to read  
14 through in terms of its structure; just a comment for next  
15 time. Thank you.

16 I'll pass it on, Mr. Chair. I'm sure  
17 others have other questions.

18 **THE CHAIRMAN:** Okay. Monsieur Harvey?

19 **MEMBER HARVEY:** Merci Monsieur le  
20 président.

21 My first question is derived from your 13B,  
22 first page:

23 "Although the source of NRX fuel bay  
24 plume has been removed, a major plume  
25 of radioactive contaminants moving

1 through the active area and into the  
2 Ottawa River high amounts of  
3 Strontium-90 are entering the river."

4 Could you comment on that? What is the  
5 importance of -- and what is the potential impact in the  
6 Ottawa River?

7 **MR. LESCO:** Randy Lesco, for the record.

8 I'd ask George Dolinar to respond to your  
9 question. George is our program authority for  
10 environmental protection.

11 **MR. DOLINAR:** George Dolinar, for the  
12 record.

13 So this plume originates from the NRX rod  
14 bays which were in operation in the fifties, and for the  
15 past number of decades AECL has tracked this plume. It's  
16 primarily strontium that we're monitoring. We've tracked  
17 this plume as it's proceeded down through the active area  
18 towards the Ottawa River. Concentrations in the plume are  
19 several tens of becquerels per litre of strontium.

20 This plume is one of the plumes, for  
21 example, under the -- considered under the Nuclear Legacy  
22 Liability Program and, as you probably are aware, that  
23 program has targeted treatment for a number of plumes on  
24 the Chalk River site. And we have a systematic framework  
25 that we've adopted from provincial guidance on plume

1 remediation and Environmental Protection Agency guidance on  
2 plume remediation so we look at the concentrations; the  
3 real extent and the impact on the receiving water or  
4 wetland, in this case the Ottawa River, and so from a  
5 Strontium-90 perspective, strontium in the Ottawa River is  
6 -- downstream from Chalk River is not measurable. The  
7 only contaminant we measure downstream to any significant  
8 degree very much below the drinking water concentration is  
9 tritium.

10 **MEMBER HARVEY:** Thank you. Does the staff?

11 **MR. ELDER:** I'll ask Mike Rinker to address  
12 that.

13 **MR. RINKER:** My name is Mike Rinker. I'm  
14 the Director of the Environmental Risk Assessment  
15 Division.

16 I certainly concur with those statements.  
17 Chalk River has a network of monitoring wells adjacent to  
18 the river. The plume itself is very well delineated and  
19 understood. There's monitoring of how that plume is  
20 migrating and those results are submitted to us, I  
21 believe, on an annual basis so we're following the  
22 movement of these plumes very closely.

23 The flux of strontium into the river is  
24 well understood because groundwater flow rates to the  
25 river and the concentrations are well mapped and we can

1 say that the DRLs from strontium are much less than 1  
2 percent so people are protected and there are no observed  
3 -- the sediments in the Ottawa River appear to be similar  
4 to background areas so the environment is protected as  
5 well.

6 **THE CHAIRMAN:** Go ahead.

7 **DR. HENDRICKSON:** Ole Hendrickson, for the  
8 record.

9 Strontium is of concern from a health point  
10 of view. It's a bone seeker. It causes bone cancer. It  
11 replaces calcium in people's bones. There is some  
12 potential for accumulation in the food chain. There are  
13 the freshwater mussels. There are fish.

14 So -- and there certainly is elevated  
15 strontium on beaches downstream from the active area so --  
16 and the presentation that I heard on this particular plume  
17 at the conference in Toronto suggested rather than tens of  
18 becquerels per litre a gross beta of 590 becquerels per  
19 litre close to shore and 70 becquerels per litre in soil,  
20 50 becquerels per litre in the water under the ice in  
21 winter.

22 I'm very concerned that, for example, we --  
23 another presentation at the Toronto conference talked  
24 about a plume from the nitrate plant; a plant that was  
25 used for fuel reprocessing experiments back in the fifties

1 and there's a plume from that plant that's migrated  
2 towards the Duke Swamp and the objective there was to keep  
3 the strontium or gross beta levels -- because strontium  
4 itself is hard to measure below 5 becquerels per litre and  
5 here we have a plume right on the active area directly in  
6 contact with the Ottawa River that's, according to a  
7 presentation that I heard, at least over a hundred times  
8 that level.

9 So I think there is some discrepancy  
10 between the information that's been presented by Mr.  
11 Dolinar and what I heard at the conference.

12 Thank you.

13 **THE CHAIRMAN:** Would you like to respond?

14 **MR. DOLINAR:** So George Dolinar, for the  
15 record.

16 We produce an annual report. As was  
17 mentioned, we report annually on strontium concentrations  
18 in this plume as well as the nitrate plant plume that was  
19 referred to as well by the intervenor so the information  
20 is out there. It's a matter of public record.

21 The only thing I would maybe clarify is  
22 total beta is not just strontium. So when we talk about  
23 total beta at a minimum, if it was only strontium in the  
24 plume, we would have yttrium in equilibrium with  
25 strontium. So if you had -- for the sake of discussion,

1 if you had a hundred becquerels of total beta and you were  
2 talking about just strontium present, there would be  
3 yttrium as the daughter so the strontium concentration  
4 would be half of that.

5 Typically we'll see other betas as well  
6 present, but in smaller concentrations. I can't speak to  
7 what the intervenor heard at a conference; I wasn't  
8 present.

9 **THE CHAIRMAN:** Here is where I'd like,  
10 maybe, somebody -- staff, maybe, to educate us so it's  
11 very nice to have the amounts in SI units; that's  
12 terrific, what does it mean to health? So I want to know  
13 about the microsieverts because that's the only thing that  
14 I'm concerned with is the impact on health and the  
15 environment. So somebody can tell me whether the numbers  
16 that have been thrown around; what's the impact on health?

17 **DR. THOMPSON:** Patsy Thompson, for the  
18 record.

19 Essentially, the information that was  
20 provided this morning in the staff CMDs and other CMDs as  
21 well as AECL's data indicate that doses to members of the  
22 public from all sources of radioactivity from the Chalk  
23 River site are less than 50 -- they're in a few  
24 microsieverts per year and all the scientific evidence of  
25 doses to members of the public in the microsievert range

1 is that there would not be any health effects expected.

2 **THE CHAIRMAN:** The intervenor makes the  
3 point about accumulation and cumulative effects here, so  
4 how do you reconcile that?

5 **DR. THOMPSON:** The doses that are measured  
6 take into consideration where the radionuclide will reside  
7 in the body and how long it will take -- it will stay in  
8 the body. So that information is taken into account. So  
9 the organs where it will go to, the length of time it will  
10 be and that is calculated into a dose, the dose is related  
11 to risk. And the intervenor, on at least two or three of  
12 the interventions, sort of speaks to if millions of people  
13 are exposed to microsieverts that we will have a lot of  
14 cancers, and this is simply wrong.

15 It's bad use of science. There is no  
16 scientific evidence to suggest that microsievert exposures  
17 will result in cancer. It's misuse of the linear no-  
18 threshold relationship.

19 All the ICRP, for example, and the BEIR VII  
20 Committees, have said that the linear no-threshold  
21 relationship is a good relationship for radiation  
22 protection purposes.

23 But all the scientists also say that the  
24 linear non-threshold relationship should not be used to  
25 calculate the number of cancers in people exposed to very

1 low doses. It's not appropriate and there is no  
2 scientific evidence to support that use of the linear no-  
3 threshold relationship.

4 **THE CHAIRMAN:** Thank you. Mr. Harvey?

5 **MEMBER HARVEY:** The second question is  
6 recommendation number 9:

7 "Given the age of the NRU reactor and  
8 the lack of containment structure and  
9 the lack of insurance, that CNSC  
10 require a worst-case analysis of  
11 radioactive releases in the event of  
12 the most catastrophic failure of the  
13 NRU reactor."

14 Could you just comment on that, and the  
15 fact that there is no containment structure, what is the  
16 importance in the -- how do you aboard that point?

17 **MR. ELDER:** Peter Elder, for the record.

18 What we would consider that NRU had, is  
19 what's called a confinement, so that there is -- the  
20 airflow goes through a venting system, through filters,  
21 and then going up to a stack.

22 Containment is usually necessary when  
23 there's a chance of pressurizing the building, and in a  
24 power reactor where you're running at -- the water in the  
25 pipes is running at 300 -- around 300 degrees C, in 100

1           atmospheres of pressure. You break a pipe and you get a  
2           lot of steam pressure very quickly.

3                         In comparison, NRU runs at atmospheric  
4           pressure and the water is about 60 degrees C. So a break  
5           in a pipe or anything would not lead to much  
6           pressurization of the system so that a ventilation system,  
7           air ventilation system, would pull any fission products  
8           that could be released up through the vented stack.

9                         If you want further in terms of the  
10          recommendations, certainly as part of looking at -- for  
11          post-Fukushima, and what we've asked AECL to do, we've  
12          mentioned a bit about severe accident management.

13                        You have to -- to do that, you have to do  
14          some analysis of various accident scenarios. This is not  
15          necessarily to see what the consequences are, but to  
16          understand how an accident could progress, so that you  
17          know how to mitigate it.

18                        So we are asking AECL to do some analysis  
19          of quite severe events in the goal of figuring out how you  
20          can mitigate the potential consequences of such events.

21                        **MEMBER HARVEY:** This is being done?

22                        **MR. ELDER:** This is being done.

23                        The analysis is not yet done, but we're  
24          discussing with them what scenarios do have to be done,  
25          and how this is going to be done.

1                   But this is -- again, these are severe  
2 accidents. This is, you know, again, addressing the thing  
3 about what are credible potential accidents. And not  
4 necessarily credible, but quite extreme events, and what  
5 would be the consequences of those extreme events.

6                   **MEMBER HARVEY:** One last question. It's  
7 number 17 in the recommendations, that CNSC require AECL  
8 to produce a complete and comprehensive map and inventory  
9 of all known underground waste plumes, all available data,  
10 et cetera, et cetera, et cetera.

11                   Is it something that is already done, and  
12 is it something that has already been made public?

13                   **MR. LESCO:** Randy Lesco, for the record.  
14 I'd ask George Dolinar to respond to your  
15 question.

16                   **MR. DOLINAR:** George Dolinar, for the  
17 record.

18                   So, yes, this information that's, I guess,  
19 described in item number 17 in the intervenor submission,  
20 is information that we provide to the Commission in a  
21 variety of reports. So it's all available and, as was  
22 mentioned earlier as well, this is part of our licensing  
23 process so it's a requirement for us to report and update  
24 on this information as well.

25                   **MEMBER HARVEY:** So there would be nothing

1 to add to what is already provided?

2 **MR. DOLIMAR:** That's correct.

3 **MEMBER HARVEY:** Okay, thank you.

4 **THE CHAIRMAN:** Thank you.

5 Dr. Barriault?

6 **MEMBER BARRIAULT:** Just one brief question,  
7 Mr. Chairman.

8 The intervenor refers to leakage of the NRU  
9 fuel bay. Is that still ongoing? Has it stopped? Is  
10 there leaks in the fuel bay or ---

11 **MR. LESCO:** Randy Lesco, for the record.

12 There are a number of things that we are  
13 doing to mitigate that issue with respect to the NRU fuel  
14 bays. For example, we've done excavation and sealing of  
15 the rod bays. We currently have a project underway to  
16 actually replace the water in a rod bays. Construction is  
17 underway for storage tanks, with the expectation come  
18 spring of next year, that we will replace the water in the  
19 rod bays to minimize the impact.

20 **MEMBER BARRIAULT:** But is there actual  
21 leakage going on?

22 **MR. LESCO:** Randy Lesco, for the record.

23 There is minor leakage that's going on for  
24 which we are continually monitoring and evaluating those  
25 results.

1                   **MEMBER BARRIAULT:** And this water is going  
2 where when it leaks?

3                   **MR. LESCO:** Randy Lesco, for the record.

4                   I would ask George Dolinar to discuss the  
5 effects of that leakage in the associated plume.

6                   **MR. DOLINAR:** George Dolinar, for the  
7 record.

8                   So the NRU rod bay plume is primarily  
9 comprised of Tritium. Tritium is the contaminant of  
10 interest as it proceeds down towards the Ottawa River. WE  
11 provide updates to the CNSC on a quarterly basis, so much  
12 more frequently than for other plumes in the Chalk River  
13 site, which we update on an annual basis. In this  
14 particular case, we've been providing updates to the CNSC  
15 on a quarterly basis on activities to characterize that  
16 plume and track it.

17                   Maybe the best way I can sort of put this  
18 in context is that plume is Tritium, some Tritium from the  
19 plume makes its way down to the Ottawa River, there is  
20 decay that happens in that flow path as a result of the  
21 time that it takes to get down to the river.

22                   But concentrations of Tritium at the  
23 nearest drinking water source, down at the Town of  
24 Petawawa, are typically in the range of, you know, 7 to 10  
25 becquerels per litre, which is 1/1,000<sup>th</sup> or so of the

1 drinking water limit.

2 So there is a contribution of Tritium from  
3 that plume to the Ottawa River, but it has a very small  
4 impact on Tritium concentrations downstream, and certainly  
5 well below the drinking water limit.

6 **MEMBER BARRIAULT:** So this is a persistent  
7 leak that has not been remedied yet at this point, if I  
8 understand correctly. How long has this leak been going  
9 on in this vessel?

10 **MR. LESCO:** Randy Lesco, for the record.

11 I'd ask George Dolinar to respond to your  
12 question.

13 **MR. DOLINAR:** So there was evidence of this  
14 leak dating back -- I think it was first sort of noted in  
15 reports that I've read, in the '60s, so this leak has been  
16 present for many, many years.

17 **MEMBER BARRIAULT:** And is it a big project  
18 to replace the containment vessel on the rod bay?

19 **MR. LESCO:** Randy Lesco, for the record.

20 There are currently no plans to replace the  
21 rod bay, as is. As I mentioned before, we are planning to  
22 replace that water to remove -- to replace it with clean  
23 water. We've also taken steps to mitigate the Tritium  
24 actually going into the rod bay. For example, during the  
25 vessel replacement, we replace the heavy tritiated heavy

1 water with slightly -- tritiated water basically clean  
2 water in heavy water.

3 **MEMBER BARRIAULT:** I'd like to ask CNSC  
4 staff to comment, really, if this is an acceptable  
5 practice, to let a leaking vessel go on and form plumes?

6 **MR. ELDER:** Peter Elder, for the record.

7 This issue has been discussed with the  
8 Commission I think on numerous occasions in the past. We  
9 did direct AECL to take -- to investigate all possible  
10 ways to reduce the leak, if they were not able to prevent  
11 it.

12 And in terms of looking at the possibility  
13 of encapsulation, so you capture the water outside the  
14 bay, you look very closely at the design of the bay and  
15 possible ways to reduce, again, leakage, and they tried on  
16 a number of occasions to plug leaks in various ways.

17 What has been most successful to date is  
18 actually to reduce the amount of tritium that is going --  
19 leaking out of the bays by just reducing the amount of  
20 tritium that goes into the bays so it's beyond what Mr.  
21 Lesco said about reducing the amount in the moderator  
22 which is the source of the tritium.

23 We also asked them to investigate ways to  
24 reduce the amount of water that it -- tritiated water  
25 that's transferred from the moderator to the bays and this

1 is, again, especially when they transfer fuel.

2 So we've gone through every single step on  
3 this one including them to do engineering studies on  
4 encapsulation. What we've determined so far is that there  
5 does not seem to be any feasible way to actually  
6 encapsulate -- you know, any project that would give you  
7 high confidence that you would completely stop the leak  
8 giving the design of the vessel and the age of the -- or  
9 design of the reactor building and the age of the base.

10 So what we're doing is a matter to  
11 eliminate the amount of tritium that is actually being  
12 released on this one. So while the amount of tritium may  
13 not pose a threat from ALARA point of view; yes, you  
14 certainly do want to make sure that if there's a leaking  
15 that you're not adding to that tritium load into the water  
16 -- Ottawa River.

17 **MEMBER BARRIAULT:** And this has been going  
18 on for 50 -- 51 years, 50 years?

19 **MR. ELDER:** Certainly, I can't say exactly  
20 how long and, certainly, we gave direction to them within  
21 the current licence period to look at this very seriously  
22 and how they were going to do this.

23 **MEMBER BARRIAULT:** Is there a timeline as  
24 to when ---

25 **MR. ELDER:** Well, there's a timeline to do

1 this. We've been tracking it. It was part of our  
2 protocol for relicensing to include what they were going  
3 to do with these bays.

4 Again, the strategy that has been  
5 successful to date -- and they need to continue with -- is  
6 actually make sure that there is a minimum amount of  
7 tritium in the bays in the first place and then there's no  
8 tritium to leak out. And this has a double benefit of  
9 preventing the releases in the environment, but also  
10 eliminates worker hazards in the bays as well.

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

13 **THE CHAIRMAN:** Mr. Tolgyesi.

14 **MEMBER TOLGYESI:** I have only one. How  
15 easy is for a simple citizen to communicate with staff --  
16 CSNS (sic) staff -- and ask questions and obtain  
17 information -- update information on hazards associated  
18 with radioactivity in the facilities? This is a  
19 recommendation -- I will say number 20 on page 41, H7.13A  
20 -- which is saying that CSNS (sic) actively cultivate a  
21 sense of liaison.

22 **MR. ELDER:** So in terms of what we've been  
23 doing is to make sure that we have information on our  
24 website that is understandable and geared to the general  
25 public, but also includes the scientific information as

1       appropriate.

2                   We have what's called an "Info Account"  
3       which means it's a mail -- a email account that we can go  
4       in and any question and then our communications people  
5       send that to get the proper technical answer if someone  
6       asks a technical question.

7                   We have been making sure that we are using  
8       proactive disclosure on events, as well, to make sure that  
9       there is timely information about any information that is  
10      reported to us; that it's available on our website.

11                  So I guess I'll ask Dr. Thompson to explain  
12      a bit more about what we're doing on the hazards and the  
13      radioactivity.

14                  **DR. THOMPSON:** Patsy Thompson, for the  
15      record.

16                  I wanted to provide some information on a  
17      program we're in the process of developing. As you know,  
18      the CNSC has new laboratory capability and we're in the  
19      process of developing an independent monitoring program  
20      where the CNSC would go and take samples around licensed  
21      facilities.

22                  And so the plan is to have on our website  
23      information on levels of radioactivity and essentially  
24      what they mean for the public and the environment around  
25      each facility that would comprise the CNSC independent

1 values, the licensee's monitoring information as well as  
2 monitoring information from the Health Canada network.  
3 And that would be on our website in a way that is easy for  
4 the public to understand.

5 We've done some benchmarking against what  
6 is being done in other countries to look at best practices  
7 and so this is something we have planned to put in place  
8 in the new few months.

9 **MEMBER TOLGYESI:** I would like to ask the  
10 gentleman, do you have -- when you are saying that you  
11 have a kind of difficulties to communicate with staff?

12 **DR. HENDRICKSON:** Ole Hendrickson, for the  
13 record.

14 There are opportunities -- I think the key  
15 opportunity is the Environmental Stewardship Council,  
16 which has been mentioned a number of times today, and my  
17 personal difficulty is finding the time to get to meetings  
18 of that body -- oh, of staff at the CNSC you mean, I'm  
19 sorry.

20 Well, I look forward to perhaps discussing  
21 the issue of the status of the waste management areas and  
22 plumes with the staff and I'll see if we can get some  
23 information that can be shared with the public on those.  
24 I think that that would be a good test of communication  
25 with staff.

1 Thank you.

2 **MR. JAMMAL:** It's in the public domain.

3 It's Ramzi Jammal, for the record. All the information is  
4 in the public domain. It's posted. It's available. We  
5 will help you with the link, too; we can email you the  
6 link.

7 **MEMBER TOLGYESI:** Unfortunately, with your  
8 time for this Environmental Stewardship, we cannot help  
9 you.

10 (LAUGHTER/RIRES)

11 **THE CHAIRMAN:** Anybody else?

12 Go ahead, Dr. McDill.

13 **MEMBER McDILL:** At the risk of asking a  
14 difficult question, how are bilateral arrangements between  
15 Canada and the United States monitored; us to them, them  
16 to us? Is that something CNSC staff is able to comment  
17 on?

18 **MR. ELDER:** I can give you a very general  
19 answer. I'm not sure if I can go back in -- there are  
20 actually in the arrangements -- certainly, in terms of  
21 some material that may be of interest, the ability to have  
22 the US counterparts come up and actually do physical  
23 inspections and they have done these in this case.

24 We'll give you a little more ---

25 **DR. McDILL:** There's a lot of movement back

1           there, I'm just ---

2                       **MR. ELDER:** Yeah, I don't know -- but Angus  
3 Laidlaw can give you a bit about what the details of the  
4 agreement are.

5                       **DR. McDILL:** So they can come up and  
6 inspect us. Now, what about the other way?

7                       **THE CHAIRMAN:** So everybody understands, we  
8 are talking about highly enriched uranium though; right?  
9 I mean, I don't think -- I think that's the subject here  
10 and while Angus is thinking about it, I also would ask  
11 AECL to think about how -- to tell us, you know, there's a  
12 lot of people who suggest that you should shift from  
13 highly enriched uranium to low-enriched uranium. What  
14 does it mean? Is it doable, et cetera?

15                       So first to -- first about the bilateral  
16 arrangement.

17                       **MR. LAIDLAW:** Angus Laidlaw, for the  
18 record.

19                       Well, if I understand the question properly  
20 -- and please, please jump in if I don't -- we have a  
21 bilateral Nuclear Cooperation Agreement with the United  
22 States and have had since June of 1955, under which two  
23 countries can exchange nuclear material, equipment and  
24 technology under certain peaceful undertakings on both  
25 sides and certain other conditions.

1                   So that with respect, for example, of the  
2 highly enriched uranium that originates in the United  
3 States that is imported into Canada subject to that  
4 cooperation agreement and Canada undertakes to the United  
5 States to make sure that it's used in a peaceful non-  
6 explosive way and also there are certain other  
7 undertakings.

8                   As far as the repatriation of that --  
9 highly enriched uranium is concerned -- with respect to  
10 highly enriched uranium fuel, which I think was the  
11 subject of recommendation 15 in the intervention, that  
12 also would after its use in Canada as it was being  
13 repatriated in the United States, it would be made --  
14 continue to be subject to the cooperation agreement  
15 despite the fact that it's the return of American-origin  
16 highly enriched uranium by virtue of the fact that it  
17 would have accumulated, it would have been essentially  
18 upgraded from the proliferation point of view.

19                   The highly enriched uranium is, of course,  
20 in Canada, subject to the safeguards agreement between  
21 Canada and the IAEA, as are all nuclear material that's in  
22 nuclear use. And so therefore it is, on a regular basis,  
23 examined by the IAEA when it makes its inspections, as are  
24 the books that record the inventories of that material in  
25 Canada.

1                   It's also subject to infrequent but  
2                   periodic visits by United States officials who come up to  
3                   examine the security arrangements under which that  
4                   material is being held.

5                   **MEMBER McDILL:** And IAEA inspects it on the  
6                   other side when it's repatriated?

7                   **MR. LAIDLAW:** Because the United States is  
8                   a nuclear weapon state, it does have arrangements with the  
9                   IAEA, the International Atomic Energy Agency, on what's  
10                  called a voluntary offer basis. And that means that  
11                  there's a list of facilities in the United States that the  
12                  U.S. has offered for safeguard should the IAEA wish to  
13                  implement them.

14                  But for, I think, fairly obvious reasons,  
15                  the agency is not interested in spending scarce resources  
16                  on doing the same sort of inspection in a weapon state, a  
17                  state that already has nuclear weapons, as opposed to a  
18                  non-weapon state where there's interest in making sure  
19                  there's no proliferation going on.

20                  So in effect, when that highly enriched  
21                  uranium is returned to the United States, it's returned to  
22                  the U.S. and is not subject to the same safeguards as it  
23                  is in Canada.

24                  However, as I said a moment ago, the U.S.  
25                  gives us -- gives its partners, including Canada, an

1           undertaking that, in fact, the highly enriched uranium  
2           will be used for peaceful, not explosive, uses when it's  
3           returned.

4                       **MEMBER McDILL:** Thank you.

5                       **THE CHAIRMAN:** And now for the easy  
6           question.

7                               How do you convert -- can you convert from  
8           highly enriched uranium to LEU?

9                       **MR. LESCO:** Randy Lesco, for the record.

10                              I'll ask Dr. Bushby. Dr. Bushby is our  
11           General Manager responsible for isotope supply reliability  
12           program, so I'd like Dr. Bushby to answer your question.

13                       **DR. BUSHBY:** Stephen Bushby, for the  
14           record.

15                              AECL has previously investigated conversion  
16           to low-enriched uranium. There is a significant amount of  
17           effort that would be required and some technical  
18           uncertainty.

19                              The timeframe for such would certainly go  
20           beyond 2016, so this would really come down to a  
21           Government of Canada decision on anything like that.

22                       **THE CHAIRMAN:** So just to push you a little  
23           bit further, if in 2014, let's say, the government decides  
24           that there's no more isotope production, you will not need  
25           highly enriched uranium any more? Is that correct?

1                   **MR. LESCO:** Randy Lesco, for the record.

2                   That is correct; they will not need highly  
3 enriched uranium for isotope production.

4                   **THE CHAIRMAN:** And you are planning to then  
5 send everything back to the U.S.

6                   **MR. LESCO:** Randy Lesco, for the record.

7                   That is correct; we would return back  
8 highly enriched uranium that has not been used.

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

10                  Anybody else has any other question?

11                  I think you have the last word -- last few  
12 words.

13                  **DR. HENDRICKSON:** Ole Hendrickson, for the  
14 record.

15                  And thank you for giving me a last word  
16 here. Thank you for letting me intervene in this hearing  
17 process.

18                  We hope that some of our concerns can be  
19 addressed in the licensing process, and in the interests  
20 of accountability and transparency, I think that it really  
21 would be good to clarify the issue of environmental  
22 assessment of the Nuclear Legacy Liabilities Project as a  
23 particular thing that I think a lot of tax dollars are  
24 getting into that program.

25                  So that's one point that I'm still not

1 totally clear about, is what is the CNSC responsibility  
2 with regard to that.

3 Thank you.

4 **THE CHAIRMAN:** I stand corrected. You're  
5 not going to have the last word.

6 I think Dr. Thompson is dying to say  
7 something about that subject that should have been raised  
8 before. Go ahead.

9 **DR. THOMPSON:** Patsy Thompson, for the  
10 record.

11 It's not to have the last word, but  
12 essentially, the -- I wanted to respond to that question  
13 earlier.

14 In the information that the intervenor  
15 provides, it gives the impression that the CNSC would not  
16 be a responsible authority under the CF projects, and the  
17 clear answer is that if there are projects that require  
18 the CNSC approval, the CNSC is responsible under the  
19 Canadian *Environmental Assessment Act* as a responsible  
20 authority to ensure that environmental assessments are  
21 being conducted.

22 So clearly, the role of the CNSC is to make  
23 sure the EA is done.

24 We have -- for example, in the case of the  
25 Port Hope area initiative, have had environmental

1 assessments where both the CNSC and Natural Resources  
2 Canada were responsible authorities. And in that case, we  
3 would work with NRCan to make sure that the environmental  
4 assessment report and the screening report or whatever  
5 report that's prepared meets the needs of the Commission  
6 as well as the NRCan decision making.

7 **THE CHAIRMAN:** But I think the intervenor's  
8 argument was that he wasn't clear about the various roles  
9 and responsibilities of CNSC with respect to waste  
10 management.

11 Do you understand your -- go ahead.

12 **DR. HENDRICKSON:** Ole Hendrickson, for the  
13 record.

14 Waste management is the key aspect of the  
15 Nuclear Legacy Liabilities Program, and certainly that's  
16 something that the public is very concerned about and very  
17 interested in. There are many other aspects.

18 There are buildings which are virtually  
19 non-contaminated with radioactive substances that are  
20 being decommissioned under the Nuclear Legacy Liabilities  
21 Project as well.

22 Some of those apparently won't even require  
23 CNSC to be involved in the environmental assessment, so at  
24 the meeting in Toronto we heard that in some cases NRCan  
25 is the responsible authority with AECL. In some cases the

1 CNSC would certainly be involved in any decommissioning or  
2 remediation activities that involved contaminated sites.

3 But I think this is coming back to the  
4 discussion of needing a more integrated and overall  
5 consistent approach to the environmental assessment of the  
6 Nuclear Legacy Liabilities Project, much as we had the  
7 discussion, why do we have a single site licence? Because  
8 everything is connected to everything else at the site.

9 The same really applies for environmental  
10 assessment of the remediation activities under the Nuclear  
11 Legacy Liabilities Project. We'd really like to see a  
12 much more consistent approach and not a whole series of  
13 piecemeal, one-off environmental assessments which really  
14 don't allow the public to -- we have consultation fatigue  
15 and consultation overload in trying to deal with such a  
16 complex mix of screenings when we really feel that some of  
17 this should be raised to a higher level so that the public  
18 has a better chance to get involved.

19 **THE CHAIRMAN:** All I can say -- all I can  
20 share with you is my understanding is quite clear, so  
21 let's take -- it's site specific by definition. Many of  
22 those waste management are site specific. And we consider  
23 CNSC, are they making sure that everything is done safely?

24 NRCan is the financier. This is the  
25 Government of Canada financing. And AECL is the agent.

1           And that's the way it works.

2                           And after that, if you look at the clean-up  
3           in Port Hope and Port Granby and in many of the mines,  
4           each site has its own peculiarities, but the bottom line  
5           is, CNSC is whatever is being done is to be done where  
6           they are safe to the public, to the environment, et  
7           cetera. And that may mean environmental assessment and  
8           all the things that goes with it.

9                           So what is it you don't understand about  
10          that process? Or maybe I don't understand.

11                          **DR. HENDRICKSON:** Ole Hendrickson, for the  
12          record again.

13                          I know that there actually have been  
14          discussions about how to bundle or do a more comprehensive  
15          approach to environmental assessment with this -- you  
16          know, these billions of dollars' worth of Nuclear Legacy  
17          Liabilities, how to get more -- some independent outside  
18          technical oversight for this, how to explain to the public  
19          how decommissioning a site leads, then, to putting those  
20          waste into some kind of waste management facility for the  
21          long term. These are very difficult and complicated  
22          questions that I don't think are being very well addressed  
23          currently, through either environmental assessment or  
24          public involvement initiatives for this particular  
25          project. And I'm -- I think that the CNSC could actually

1 be helpful in terms of creating a more integrated approach  
2 to addressing these major public investments.

3 **THE CHAIRMAN:** Stop; we've got to move on.  
4 Thank you very much. Thanks a lot. You did get your last  
5 word. Thank you.

6 We're moving on now, I think, to written  
7 submissions.

8 So Marc, will you take us through this,  
9 please?

10 **MR. LEBLANC:** The first written submission  
11 is from Mr. Eugene Sokolov, as mentioned earlier, could  
12 not make it today as outlined in CMD 11-H7.12.

13 Are there questions from the Commission  
14 Members with regard to this submission?

15 **MEMBER BARRIAULT:** Just one brief question.  
16 He refers to the nuclear oversight program at AECL, CRL.  
17 He wanted some answers, from what I understand, from the  
18 CNSC. Can these answers be provided?

19 It's in the last paragraph:

20 "Unfortunately, I still did not get  
21 answers to my question about status of  
22 the nuclear oversight program at AECL,  
23 CRL. It is not clear if information  
24 available from CNSC staff on nuclear  
25 oversight on the NRU pressure boundary

1 conditions and specific qualifications  
2 of the PINO nuclear oversight  
3 management."

4 So I guess he's looking for answers. Can  
5 we provide those answers?

6 **MR. ELDER:** Peter Elder, for the record.  
7 I'll give you a high level, and then we can go to a  
8 specialist if that's not right.

9 What we have done in this licence is it  
10 refers to the new version of -- or the most recent version  
11 of the management system standard, which is N-285, and it  
12 replaced -- it used to be there used to be about 10  
13 different standards. These have all been consolidated  
14 into one higher standard that has -- and then points to  
15 the various parts on this.

16 So in the past, you may have pointed to a  
17 particular standard. That's now all been rolled up into  
18 one higher level standard. So his comments about nuclear  
19 oversight are very explicit in N-286. So we don't have to  
20 point that said you must do oversight; it's part of the  
21 standard now.

22 **MEMBER BARRIAULT:** Well, that's fine.  
23 Thank you.

24 **THE CHAIRMAN:** Any other? Okay.

25 **MR. LEBLANC:** And the next written

1 submission is from the Métis Nation of Ontario as outlined  
2 in CMD 11-H7.10 and .10A.

3 Are there any questions from the Commission  
4 Members with regard to this written submission?

5 **THE CHAIRMAN:** Dr. McDill?

6 **MEMBER MCDILL:** The first question, when  
7 the Métis -- MNO submitted their second supplementary  
8 information, did they ask for the first one to be removed?

9 **MR. LEBLANC:** Not to my knowledge, no.

10 **MEMBER MCDILL:** There are some questions in  
11 the original one which -- paragraphs that are gone on  
12 things like groundwater monitoring and fish impingement,  
13 so I wasn't sure if they had those questions resolved or  
14 not.

15 So I'll just do them because they're here  
16 in front of us. Under groundwater monitoring on the  
17 September 6<sup>th</sup> one, they state:

18 "It's a concern that groundwater  
19 monitoring occurs only every five to  
20 10 years."

21 I just wanted that on the record as not  
22 being the case.

23 **MR. LESCO:** I'll have Mike Rinker answer  
24 that.

25 **MR. RINKER:** Mike Rinker.

1                   That's not the case. We do get annual  
2 reports and quarterly reports.

3                   **MEMBER McDILL:** Thank you.

4                   And the second difference was on fish  
5 impingement, and it quotes Mr. Dolinar. So maybe AECL  
6 would like to -- during the June 8<sup>th</sup>, '11 -- June 8<sup>th</sup>, 2011  
7 hearing, Mr. Dolinar states this small amount of fish,  
8 referring to 11,000 fish, and then it's gone. That  
9 particular comment is gone in the next one.

10                   So perhaps I could just ask AECL to comment  
11 on that briefly.

12                   **MR. LESCO:** Randy Lesco, for the record.

13                   I'd ask George Dolinar to respond to your  
14 question.

15                   **MR. DOLINAR:** George Dolinar, for the  
16 record.

17                   So AECL did host a visit from the Métis  
18 Nation of Ontario representatives in September. And so  
19 many of these, I guess, questions or concerns that they  
20 had were discussed and I guess potentially resolved.

21                   On the issue of fish impingement, the Métis  
22 did a simple calculation and, you know, on a typical day,  
23 over a 24-hour period there will be anywhere from 10 to 35  
24 or, you know, roughly 30 minnow-sized fish impinged at the  
25 powerhouse, our main water intake. And so they did a

1 simple calculation of multiplying 356 times 30 to arrive  
2 at that number.

3 We gave them a fairly detailed presentation  
4 and there was a picture of a baggie, like a sandwich-sized  
5 baggie, which our staff collect the minnows, and these are  
6 minnows that would be sort of smaller than bait fish that  
7 are impinged. So they saw a photograph of what we're  
8 talking about, and I think that went a long way to  
9 resolving their concern.

10 **MEMBER McDILL:** So perhaps some of the  
11 differences I'm reading here are as a result of the  
12 meetings you had.

13 **MR. DOLINAR:** Correct.

14 **MEMBER McDILL:** Thank you.

15 My next question is with respect to the MNO  
16 initiatives on summer career placement. I'm not asking  
17 for a commitment from AECL, but given that you support the  
18 Deep River Science Camp, what is your position on this  
19 particular initiative that MNO is suggesting with respect  
20 to employment of Métis?

21 **MR. WALKER:** Bob Walker, for the record.

22 We would be prepared to entertain that  
23 proposal with MNO.

24 **MEMBER McDILL:** Thank you.

25 And my last one on this intervention was, I

1 wonder if I could ask staff to just bring to MNO's  
2 attention the calculations that were done on the  
3 differences between 7,000 Becquerels per litre and the  
4 various other jurisdictions internationally. Because I  
5 think we -- you have a paper, we have a paper on that.

6 **DR. THOMPSON:** Patsy Thompson, for the  
7 record.

8 We'll make sure we provide the -- a copy of  
9 the information document that relates to that analysis.

10 **THE CHAIRMAN:** And particularly the  
11 statement about the comparison with the U.S.A. and Europe  
12 as now being so dangerously high. I think this should  
13 clarify some things here.

14 Thank you.

15 Anybody else? Mr. Harvey?

16 **MEMBER HARVEY:** Just one question.

17 Right at the beginning of their second  
18 submission, the first paragraph is:

19 "During the site tour at CRL, the  
20 Métis Community noticed that the  
21 fencing which surrounds the facility  
22 and the road, which crossed large  
23 bodies of water, may be impeded or  
24 even restrict the movement of large  
25 game, of reptiles and amphibians."

1                   For the interests of the Métis Community,  
2 does CRL have any mitigation in place to encourage free  
3 movement of spaces?"

4                   **MR. LESCO:** Randy Lesco, for the record.  
5 I'd ask George Dolinar to respond to your  
6 question.

7                   **MR. DOLINAR:** George Dolinar, for the  
8 record.

9                   So large mammal movement on the Chalk River  
10 site was one of the considerations that was put into the  
11 design of fencing, both perimeter fencing as well as there  
12 are areas on the Chalk River site that are fenced.

13                   So with those interior fences, I can  
14 comment that we do have large mammal gateways. So if they  
15 do happen to hop into an area, if they wander around the  
16 perimeter of the fence, they'll get to a -- like a turn-  
17 stile type of arrangement where they can get out.

18                   In terms of the perimeter fencing, I'm not  
19 sure what the protocol is, but this sort of gets into the  
20 area of security of the site, so I'm not sure whether this  
21 is part of an *in camera* discussion. I don't know if it's  
22 appropriate for me to get into the details of that at this  
23 point.

24                   **MEMBER HARVEY:** That's okay; thank you.

25                   **MR. LEBLANC:** The next submission ---

1                   **THE CHAIRMAN:** Hold on, hold on. I have a  
2 question here.

3                   There is a statement here about "Encourage  
4 AECL to fund" -- this is still on the first page of  
5 September -- "to fund the fish hatchery program in  
6 partnership."

7                   Is that the one that you made reference  
8 before to? Do you know on the first page, one, two, third  
9 paragraph, the last ---

10                  **MEMBER MCDILL:** What's the date on the  
11 report?

12                  **THE CHAIRMAN:** This is September 2011.

13                  **MEMBER MCDILL:** There's two Septembers, so  
14 6<sup>th</sup> and 30<sup>th</sup>.

15                  **THE CHAIRMAN:** Whoops, 27<sup>th</sup>.

16                  **MEMBER MCDILL:** That's the second one.

17                  **MR. LEBLANC:** Page 6.

18                  **MR. CHAIRMAN:** Page 6. I guess it's  
19 another one. Okay. The same place where Monsieur Harvey  
20 just raised the question.

21                  If you just move two paragraphs below. It  
22 talks about "even though fish" -- it's starting with  
23 "Even though fish". If you look at the bottom, they  
24 suggest that you work with them to develop a fish hatchery  
25 program.

1                   **MR. LESCO:** Randy Lesco, for the record.

2                   I think there's an opportunity here to have  
3 further discussions with Métis on how can we move forward  
4 and address their issues.

5                   **THE CHAIRMAN:** Okay. My last question is  
6 on the next page, they're talking about further monitoring  
7 along the Quebec side of the river. But I thought you're  
8 doing monitoring quite extensively all along.

9                   So what is the -- does that recommendation  
10 make sense?

11                   **MR. LESCO:** Randy Lesco, for the record.

12                   I'd ask George Dolinar to answer your  
13 question.

14                   **MR. DOLINAR:** George Dolinar, for the  
15 record.

16                   So the Chalk River environmental monitoring  
17 and emission monitoring program has evolved over many  
18 years. A lot of thought and effort has gone into  
19 determining what media and biota need to be sampled at  
20 what locations.

21                   The program certainly includes numerous  
22 monitoring locations on the Quebec side of the river, as  
23 appropriate. There are figures in our annual  
24 environmental monitoring report which would show the  
25 monitoring on the Quebec side of the river.

1 I think it's also important, maybe in  
2 fairness to the intervenor's submission, if you look at  
3 the Chalk River site, of course, we do a lot of emission  
4 monitoring, a lot of monitoring on the site proper. And  
5 so if you look at just the site, it looks like there's a  
6 lot more monitoring on the Ontario side.

7 If you remove that from the equation, and  
8 we have a few diagrams in our annual report which do just  
9 that, it shows that there is considerable monitoring on  
10 the Quebec side of the river as well.

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

12 Marc?

13 **MR. LEBLANC:** So the next submission is  
14 from Renfrew County District School Board as outlined in  
15 CMD 11-H7.14.

16 Any questions from the members?

17 **THE CHAIRMAN:** Just an observation here, is  
18 that do you consider you need to do some little more  
19 outreach with kids and teachers?

20 I think that's the way I get to read in  
21 between the lines here.

22 **MR. WALKER:** Bob Walker, for the record.

23 I agree entirely with the President.

24 **THE CHAIRMAN:** Thank you.

25 **MR. LEBLANC:** The next submission is from

1 Ontario Power Generation as outlined in CMD 11-H7.15.

2 Any questions from the Members?

3 **THE CHAIRMAN:** Again, no questions.

4 Is it understood now by government --  
5 forget about the isotope for a second -- that just to  
6 maintain our nuclear fleet requires research facilities?

7 Is that concept, you know, for doing some  
8 tests, et cetera, is well understood and accepted?

9 I'm not going to put you on the spot with  
10 accepted. Understood.

11 **MR. WALKER:** Bob Walker, for the record.

12 We have -- AECL has a regular dialogue with  
13 our colleagues at Natural Resources Canada in  
14 understanding all of the programs that we execute and how  
15 those programs are contributing to multiple stakeholder  
16 interests. And high on that list is to support the  
17 utilities in the ongoing safe and reliable operation of  
18 the CANDU fleet.

19 So NRCan has visibility. Natural Resources  
20 Canada has strong visibility of those programs.

21 **THE CHAIRMAN:** I guess my question, to put  
22 it slightly differently, does Ontario Power Generation go  
23 and talk to NRCan?

24 **MR. WALKER:** Bob Walker, for the record.

25 That is my understanding, and that it

1 occurs at quite senior levels.

2 **THE CHAIRMAN:** Thank you.

3 **MEMBER TOLGYESI:** I had one -- when you  
4 were talking about some examples of research and  
5 development services which are provided by you to OPG,  
6 it's something which is on a contract basis or it's you  
7 supply those services to all -- to Ontario Power  
8 Generation and Bruce and all other facilities, nuclear  
9 facilities, or it's specific service which is required by  
10 one or other?

11 **MR. WALKER:** Bob Walker, for the record.

12 There are multiple ways that AECL Nuclear  
13 Laboratories support the utilities. The principal  
14 mechanism is through the programs managed under the CANDU  
15 Owners' Group, which is a cooperative body that engages  
16 the utilities in pooling of resources and ultimately  
17 addressing a number of issues that are common to the CANDU  
18 utilities worldwide.

19 And in that regard, the research and  
20 development program of the so-called COG, or CANDU Owners'  
21 Group, is a principal mechanism by which the facilities  
22 address their ongoing safety and reliability issues.

23 AECL Nuclear Laboratories is a strong  
24 participant and supplier to that program.

25 There are also specific -- under the CANDU

1 Owner Group, specific joint projects to which the  
2 utilities, in groups of two or more, pool resources and --  
3 along with AECL nuclear laboratories and other suppliers  
4 in Canada to meet those needs. And, for example, one of  
5 the flagship projects undergoing -- going forward  
6 currently is work that we are conducting, AECL nuclear  
7 laboratories, with other suppliers to answer the  
8 fundamental questions of the remaining life in the fuel  
9 channels of the fleets for both Bruce Power and OPG.

10 And that is providing critical data to the  
11 leadership of the utilities on this cycle for  
12 refurbishment of those plants.

13 **MEMBER TOLGYESI:** Will end of isotope  
14 production affect your capability or capacity to supply  
15 these services by any means?

16 **MR. WALKER:** Bob Walker, for the record.

17 To the Commissioner, that's a very, very  
18 complex question to respond to.

19 The reality is that the -- while we have  
20 these multiple missions conducted at Chalk River, they are  
21 highly inter-dependent in terms of the capabilities that  
22 we have to move forward. So it's not immediately evident  
23 how one reaches in and says no more isotope mission; how  
24 does that impact on the rest of the capability that we  
25 have.

1                   That will clearly be analysis that will  
2                   have to be done as part of the second phase of  
3                   restructuring that Madam Cl  roux made reference to earlier  
4                   going forward. And -- but I would be -- it would be  
5                   premature for me to try to speculate on what the outcome  
6                   of that would be.

7                   **THE CHAIRMAN:** Okay. Marc?

8                   **MR. LEBLANC:** So the last written  
9                   submissions is from the National Research Council of  
10                  Canada as outlined in CMD 11-H7.16.

11                  Any questions from the Commission Members?

12                  **THE CHAIRMAN:** Questions?

13                  Just maybe what happened during the  
14                  shutdown? What happened to those researchers and the  
15                  students that were doing a neutron scattering?

16                  I mean, they lost a whole year, I guess.  
17                  And I understand that they had a really rough time finding  
18                  another place to go to, so what happened?

19                  **MR. WALKER:** Bob Walker, for the record.

20                  That is much like the President inferred.  
21                  There was opportunities for some of our researchers to  
22                  gain access to other neutron sources in the world, but it,  
23                  in broad principle, led to a substantial slowdown in the  
24                  science programs of these communities that otherwise  
25                  access the NRU.

1                   **THE CHAIRMAN:** I just didn't hear any kids  
2 marching on the hill talking about, you know, losing their  
3 degrees and things of that nature. It was really -- I  
4 never realized the kind of side effect of this.  
5 Collateral damage, as they say.

6                   **MR. WALKER:** Bob Walker, for the record.  
7                   This comes back to the fundamental issue  
8 that the NRU has three missions. And while isotopes is  
9 perhaps the one that's most visible in the public policy  
10 context, those other two missions are fundamental  
11 contributions that we make to many other stakeholders.

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

13                   Okay. So now we're coming to -- I know  
14 it's late, but we are going through round two where all  
15 those really tough questions that we have not posed yet  
16 can be now tackled.

17                   And starting with Monsieur Harvey.

18                   **MEMBER HARVEY:** Monsieur le président.

19                   I would like to start with the -- page --  
20 that's in 11-H7.1F, page 6-2, those two figures there  
21 about the volume of low-level waste and intermediate-level  
22 waste. I'd like to maybe -- or this is on H7.1F page 6-2.  
23 That's at the end, the last page of the document those two  
24 figures. You've got it.

25                   I would like maybe -- I don't know I've got

1 a good comprehension of those figures because there is a -  
2 - quite an increase between 2010 and 2011.

3 What is the source of the -- could you  
4 elaborate on that and see -- is that the soil on site or  
5 is the soil everywhere in Canada where you've got --  
6 within the liability program?

7 Just to have the meaning of those two  
8 figures.

9 **MR. LESCO:** Randy Lesco, for the record.  
10 I'd ask Joan Miller to respond to your  
11 question.

12 **MS. MILLER:** Joan Miller, for the record.  
13 So the diagram on the left representing  
14 2010 identifies the different types of waste -- low-level  
15 waste that we have on -- in storage and also intermediate-  
16 level waste. The low-level waste is made up of -- as you  
17 can see, a large fraction of that is contaminated soil  
18 that is in our storage facilities.

19 Indeed, most of that soil was soil that was  
20 transported from Port Hope in the late 1970's to the Chalk  
21 River site. And then the general low-level waste is just  
22 from our operational waste.

23 Projecting forward to 2100, we have, for  
24 this projection, assumed generally the clean-up of the --  
25 or the remediation of the Chalk River site.

1                   So we had discussion earlier today about  
2                   contaminated plumes et cetera, so at this point for this  
3                   projection we're assuming that those plumes would be  
4                   remediated and that soil would need to be stored. So that  
5                   you see the large amount of increase in low-level waste is  
6                   largely due to increased soil.

7                   The other general low-level waste increase,  
8                   and also some of the intermediate-level waste, will be  
9                   from decommissioning of the facilities or the buildings on  
10                  site.

11                  So this is a simple projection. It doesn't  
12                  take into account any specific decisions about how we  
13                  might deal with some of the materials, whether or not they  
14                  will be left for in situ disposal, et cetera. But, that's  
15                  the source.

16                  **MEMBER HARVEY:** Okay, so there's nothing  
17                  new, I mean ---

18                  **MS. MILLER:** No.

19                  **MEMBER HARVEY:** --- this is -- the soil is  
20                  already there, what, it has to be placed some other  
21                  location?

22                  **MS. MILLER:** Joan Miller, for the record.  
23                  That's correct.

24                  **THE CHAIRMAN:** And that does not mean that  
25                  continuing operation to 2100? Is that -- in the

1 projection, are you still assuming that everything will be  
2 as normal? NRU will be alive to 2100?

3 **MS. MILLER:** Joan Miller, for the record.

4 This assumption, and that is the basis of  
5 the 70-year Nuclear Legacy Liability Program, is that all  
6 of the buildings and infrastructure that was on the site  
7 up to 2006 would have been shut down and decommissioned.

8 **THE CHAIRMAN:** Okay, got it.

9 Monsieur Harvey?

10 **MEMBER HARVEY:** My next question is  
11 addressed to the staff.

12 In H7.C, page 3, you are talking here of  
13 high-level schedule. What is the difference between a  
14 high-level schedule and a schedule?

15 I mean, is this something very flow --  
16 could you elaborate on that?

17 **MR. ELDER:** Peter Elder, for the record.

18 I think we slipped into project management  
19 terminology on this one.

20 Yes, some were a scheduled -- a project  
21 manager was scheduled and sometimes you get a thousand  
22 pages. So we -- there is a way to roll that up into  
23 bigger forecasts, they're usually called the high-level  
24 schedule, so it's something that makes sense to -- usually  
25 for senior management and that to look at, so that's what

1 we're talking about.

2 So it ---

3 **MEMBER HARVEY:** It's s supported by ---

4 **MR. ELDER:** It's supported by another ---

5 **MEMBER HARVEY:** --- a normal schedule with  
6 all the activities?

7 **MR. ELDER:** --- detailed levels underneath,  
8 yes.

9 **MEMBER HARVEY:** Okay, I thought it was two  
10 different things, it's just something ---

11 **MR. ELDER:** No, it's not two different  
12 things.

13 It's the high level which we have presented  
14 of what they're going to do, and then underneath that,  
15 there is a detailed schedule on how you do it.

16 **MEMBER HARVEY:** Okay, and just -- the last  
17 paragraph of that background big paragraph, could you  
18 explain that just:

19 "Licensing activity for the NRU  
20 Reactor are addressed within the wider  
21 context of the licence when  
22 (inaudible) for Chalk River  
23 Laboratory, taking into account the  
24 health directive of the CNSC by the  
25 Government of Canada."

1                   This is something I don't recall to see  
2                   that anywhere. I think it's the first time I see that in  
3                   a document coming from the staff. Maybe I'm not right,  
4                   but ---

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

7                   It's nothing new. What we're trying to say  
8                   here is the licensing activity is -- there was no  
9                   compromise to safety in any way, shape or form. And as we  
10                  evaluated the planned activity -- the licence activity, we  
11                  took into consideration one of the criteria, the health  
12                  directive that the government gave to the Commission back  
13                  in 2007.

14                  **MEMBER HARVEY:** Says the health concerning  
15                  the air ---

16                  **MR. JAMMAL:** Taking consideration of the  
17                  health of Canadians.

18                  **MEMBER HARVEY:** The highs of the  
19                  production?

20                  **MR. JAMMAL:** Correct.

21                  **MEMBER HARVEY:** Okay, but that doesn't make  
22                  any difference ---

23                  **MR. JAMMAL:** None whatsoever. Just being  
24                  here upfront clarifying the fact that this was taken in  
25                  consideration without compromise to safety.

1                   **MEMBER HARVEY:** Okay, thank you.

2                   Okay for the moment, I will pass the -- I  
3 might come back though.

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

5                   If I can get CNSC to go to their  
6 presentation this morning, Slide 21, first bullet in the  
7 Conclusions. It says:

8                                 "AECL has operated the facility at  
9                                 CRL safely during this licence  
10                                period."

11                   And I think this is probably just an  
12 editorial comment but in what category would you fit in  
13 the fact that you had to shut down the reactor because it  
14 didn't have the back-up power supply on the coolant pumps  
15 to the reactor?

16                                 Would that be an unsafe act or ---

17                   **MR. ELDER:** Peter Elder, for the record.

18                   I think we're looking at it and said if the  
19 reactor is shut down it's safe, it's in a safe state, so  
20 that we -- I think in that case I would say that there was  
21 -- AECL took the safe decision to shut it down and then  
22 there was dispute on what were the conditions to restart  
23 it.

24                   **MEMBER BARRIAULT:** So they did that  
25 voluntarily then?

1                   **MR. ELDER:** Voluntarily in that one.

2                   So I think in terms of -- in both cases of  
3                   that case and certainly with the leak, they took the  
4                   proper action when they were -- with the situation, then  
5                   there may have been discussions where the requirements on  
6                   -- to restart afterwards.

7                   **MEMBER BARRIAULT:** Yeah, I wasn't sure if  
8                   it was an editorial comment or whatever. Okay, that's  
9                   fine, thank you.

10                   Next question is to AECL. With the  
11                   reorganization of the company, obviously, lay-offs,  
12                   restructuring, new positions, what are you doing to keep  
13                   the employees safely focused in their employment -- in  
14                   their work, given the situation? That's one of the tough  
15                   questions.

16                   **MR. WALKER:** Bob Walker, for the record.  
17                   That is a difficult question here,  
18                   Commissioner.

19                   The first thing we do is regularly meet  
20                   with employees to give as much information that we have on  
21                   where things are going with restructuring.

22                   More to the point though, we focus on doing  
23                   our business, keeping people focused on our commitments,  
24                   our programs, our improvement initiatives around our  
25                   safety culture, and through that keep the attention

1 focused on the job at hand.

2 We do use instruments, CNSC has recently  
3 implemented a safety culture survey to give us evidence of  
4 whether we are seeing any trends that would be problematic  
5 as well as gauging a number of our lag indicators around  
6 safety concerns.

7 All of these are trying to very much have  
8 people focus on the job at hand.

9 We do not have evidence that there's any  
10 particular consequences of the uncertainty playing back on  
11 the safety posture of the laboratories.

12 I would highlight that in the context of  
13 layoffs, there have been no layoffs at the nuclear  
14 laboratories as the result of the process going forward.  
15 That -- it doesn't say that they may not be a consequence  
16 at some point in the future but that's not been the case  
17 to date.

18 So I would ask that perhaps Randy -- Mr.  
19 Lesco add some further context from his perspective.

20 **MR. LESCO:** Randy Lesco, for the record.

21 Clearly the changes that have occurred in  
22 terms of restructuring haven't really impacted the way we  
23 do business. Our programs still exist from the safety  
24 perspective with our various program managers and program  
25 authorities, to making sure that we continue operating

1 safely. So the -- we remain intact and there's no change  
2 with respect to changes that have occurred recently.

3 **MEMBER BARRIAULT:** Thank you.

4 Thank you, Mr. Chairman, that's all for  
5 now.

6 **THE CHAIRMAN:** Thank you.

7 Mr. Tolgyesi?

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

10 I will come back to this lessons learned  
11 from Fukushima. What you're saying in the staff  
12 presentation 11-H7D, page 9, in the middle. You said that  
13 immediately following the Japanese earthquake, AECL  
14 identified potential seismic deficiencies in two process  
15 tanks may affect several accredited safety systems.

16 Which kind of -- could you specify which  
17 safety systems and what are the potential consequences  
18 affected?

19 **MR. ELDER:** Peter Elder, for the record.

20 I think AECL may want to add on this one  
21 but this is one room -- it's called Room 111, but it's  
22 actually a very high horizontal room where there is piping  
23 for the emergency water supplies at the bottom and a tank  
24 above it -- a reservoir tank for another system above it.  
25 And the concern was if the tank was full and there was a

1 seismic event, it could fall down and break the pipes  
2 underneath that would then make your emergency water  
3 supply not available.

4 The solution was to actually make sure that  
5 the tank was not full and they put in -- and while they  
6 did additional assessments on what sort of additional  
7 supports it may need.

8 I think AECL may give -- want to give you  
9 an update on where they are on that. But they took  
10 immediate action to mitigate the risk ---

11 **MEMBER TOLGYESI:** M'hm.

12 **MR. ELDER:** --- and eliminate it.

13 **MR. LESCO:** Randy Lesco, for the record.

14 Basically, these two tanks do not perform  
15 any safety function. One is a -- normally an empty  
16 storage tank ---

17 **MEMBER TOLGYESI:** Right.

18 **MR. LESCO:** --- and we did, during the  
19 extended outage, do additional modifications to reinforce  
20 it from a seismic point of view.

21 The second tank which we use for normally  
22 providing demineralised water to the systems; we've  
23 basically taken administrative controls to limit the  
24 volume of water to make sure it doesn't have an impact  
25 during the seismic event.

1                   **MEMBER TOLGYESI:** At the same page, what  
2 you're saying also in the last paragraph, that the staff  
3 acknowledged that AECL conducted committed short-term  
4 activities but additional information is required to  
5 support AECL's conclusions. What's the ---

6                   **MR. ELDER:** Peter Elder, for the record.  
7                   They did a number of inspections and we  
8 said, "Don't tell us, we want to see your inspection  
9 reports; we want to see the documentation that you  
10 actually did this."

11                   So we're not questioning whether  
12 inspections were done or not, then we're saying we are  
13 looking at additional information beyond that. If they do  
14 a walk down of a system -- usually produce a detail report  
15 of what you found, what were the deficiencies.

16                   And so the initial response we got was  
17 saying, "We've completed this work." And we said, "Okay,  
18 show us essentially that you've documented that work; that  
19 it's documented and so if we go back in five years, we  
20 know what was done and what you did look at, if there are  
21 further lessons and something else has to be done."

22                   **MEMBER TOLGYESI:** What's the -- potentially  
23 the worst-case scenario to AECL considering the Fukushima  
24 events? You know, when you're looking at what's happened  
25 there, what could be for you the worst-case scenario?

1           Probably not a tsunami because you don't have it.

2                       **MR. LESCO:** Randy Lesco, for the record.

3                       We've been proactively looking at the  
4           lessons learned from Fukushima and we've been closely tied  
5           to what the power utilities are doing in terms of a  
6           bounding case.

7                       For example, total loss of site power  
8           together with a loss of backup power supplies. And so  
9           we've looked at that event as part of our lessons learned.  
10          And so as we go forward, there's really a strategy in  
11          terms of looking at -- for example at that bounding case.

12                      One is to prevent to event turning into an  
13          accident. And, two, should the event progress into an  
14          accident, what steps that we could take to either stop or  
15          mitigate the progression of the accident.

16                      In this regards, the event -- the bounding  
17          case that has been looked at currently by the utilities  
18          with the loss of power and loss of backup supply, is that  
19          we are moving to procure mobile diesel generators, as an  
20          example, to allow us to prevent the event -- whatever the  
21          cause -- from progressing into an accident.

22                      **MEMBER TOLGYESI:** Two short answers, Mr.  
23          President, is what -- my understanding is that Class 4  
24          power is the power from provincial power grid; Class 3 is  
25          the plant diesel; what's the Class 2 and Class 1?

1                   **MR. LESCO:** Randy Lesco, for the record.

2                   Basically, we're talking about diesels as  
3 well as batteries being Class 1 and Class 2. The -- it  
4 should be noted that for the NRU reactor, for example, we  
5 have backup -- normal backup which is considered the  
6 reactor diesels, followed by another set of seismically  
7 qualified diesel generators called our emergency power  
8 supply generators. And backing that up, we also have  
9 battery power to provide the necessary cooling and  
10 circulation.

11                   **THE CHAIRMAN:** So when you were down for 20  
12 hours, okay, the unexpected which was a little stretch  
13 test, how much longer could you have gone without power?  
14 I mean, did you -- in this particular case did you have an  
15 unlimited supply of diesel or would you be able to go and  
16 order it? How long could you have gone without power?

17                   **MR. LESCO:** Randy Lesco, for the record.

18                   Provided that we had a supply -- a constant  
19 supply of diesel fuel, we could have ran for a long time.

20                   **THE CHAIRMAN:** Well, did you have an  
21 unlimited supply or you were running -- were you getting  
22 to the bottom?

23                   **MR. LESCO:** Randy Lesco, for the record.

24                   I'd ask Dave Cox to take about the various  
25 fuel supplies associated with providing diesel fuel to the

1 reactor and diesel generators.

2 **MR. COX:** Dave Cox, NRU Facility Authority,  
3 for the record.

4 During the July power outage, which lasted  
5 for 20 hours, we were able to establish deliveries of  
6 diesel into the plant and had arrangements in place for  
7 topping up diesel at various of the generator locations,  
8 both in the morning and evening. The purpose for that was  
9 to keep the system topped up, not knowing how long we were  
10 going out for.

11 In the absence of provision of delivery of  
12 diesel fuel to the site, we have in storage several days  
13 of available diesel fuel between four and 10 days is the  
14 available inventory of diesel fuel to cover off our  
15 options, but in July we arrange deliveries in order to  
16 keep things topped up.

17 **THE CHAIRMAN:** So many sites are  
18 considering totally off-site, sort of, emergency supply.  
19 Are you looking into this maybe in a cooperative way with  
20 other facilities?

21 **MR. LESCO:** Randy Lesco.

22 As part of our plans associated with  
23 responding to Fukushima, that is one of the considerations  
24 that we were looking at providing what resources can be  
25 made available off site like fuel supplies, as an example,

1           like additional mobile diesel generators. So we are  
2           looking at that as part of our Fukushima response.

3                       **THE CHAIRMAN:** Mr. Tolgyesi?

4                       **MEMBER TOLGYESI:** Yes. You said it's four  
5           to 10 days, the storage capacity what you have fuel  
6           storage, but your on site is good to supply power from  
7           between four to 10 days. That's what you said?

8                       **MR. COX:** Dave Cox, for the record.  
9                       That is correct.

10                      **MEMBER TOLGYESI:** What's the difference?  
11           Four and 10 is quite long.

12                      **MR. COX:** Dave Cox, for the record.  
13                      The emergency diesel or the seismically  
14           qualified/hazard qualified diesels that Mr. Lesco referred  
15           to as part of the Class 2 system has special fuel which is  
16           in particular drums. It needs to be maintained in a  
17           separate inventory and sampled at regular frequency in  
18           order to assure its quality, and so that's a separate  
19           supply of diesel and that's the reason for the two  
20           different timeframes.

21                      Other diesel generators are supplied by  
22           regular diesel delivery under commercial arrangements.

23                      **MEMBER TOLGYESI:** Do you have a facility to  
24           supply diesel from waterfront by boats or ships or  
25           whatever? If -- you know, if it's an earthquake there's

1 no access through the road.

2 **MR. LESCO:** Randy Lesco, for the record.

3 I think there's an opportunity to look at  
4 that in terms of, you know, in providing continuous supply  
5 of diesel fuel, but the point I'd like to reiterate is  
6 that we have sufficient time with the fuel supplies on  
7 site to react and to respond appropriately.

8 **MEMBER TOLGYESI:** Okay, my last question.

9 Which criteria are required to activate the  
10 Emergency Operation Centre because what you did in this  
11 case with the 20-hour shutdown, you activated the  
12 Emergency Centre -- Emergency Operations Centre.

13 What kind of evidence do you need or what's  
14 the criteria to do this?

15 **MR. LESCO:** Randy Lesco, for the record.

16 I'd ask Cathy Fisher to respond to your  
17 question.

18 **MS. FISHER:** Cathy Fisher, for the record.

19 So the Emergency Operations Centre at Chalk  
20 River, any time there is any type of emergent or unplanned  
21 condition happening at the site, the Senior Emergency  
22 Officer is contacted and they make a decision as to  
23 whether they need to partially activate, fully activate  
24 the Emergency Operations Centre or if they just need to be  
25 kept informed.

1                   So there are a number of times where we  
2 will actually just have the Senior Emergency Officer kept  
3 informed.

4                   During a power outage, the routine would be  
5 for the Senior Emergency Officer to verify the status of  
6 where we are with the operations on the site in a safe  
7 state and they would make a decision as to whether they  
8 wanted to convene the Emergency Operations Centre to  
9 further support those folks who are helping to maintain  
10 that safety.

11                   **MEMBER McDILL:** Thank you. One last  
12 question.

13                   In terms of the Legacy Program, some of it  
14 will be dealt with in the next five years, for example,  
15 the FISST tank, we hope, for example. But as we go  
16 forward and just to finish up an answer that, I think,  
17 wasn't quite complete last time around, how do the  
18 responsible authorities interact on these kinds of things  
19 as we go forward over the next years?

20                   And I think Dr. Thompson was sort of in a  
21 position to answer that when the conversation moved on  
22 last time around.

23                   **DR. THOMPSON:** Patsy Thompson, for the  
24 record.

25                   Essentially, the protocol that deals with

1 the Nuclear Legacy Liability Program calls for a more  
2 comprehensive type of EA than what we've done on some of  
3 the Chalk River projects where we do small EAs on each  
4 little project and it's to address, essentially, the  
5 connectivities and interactions from one project to the  
6 other so that we can do something that helps in planning  
7 for environmental performance and ensures, essentially,  
8 that we have all the information to make all the  
9 decisions.

10 At the time, the program will be looked at  
11 in terms of projects that can be put together that would  
12 make sense to do an EA for those projects in a package and  
13 the -- essentially, the way it works is with the Federal  
14 Coordination Regulations, we receive a project  
15 description. We would go to other federal departments to  
16 see if they have decisions to make or, for example, in the  
17 case of Natural Resources Canada, when they provide  
18 funding they become a responsible authority.

19 And so through the Federal Coordination  
20 Process, we identify who the responsible authorities are  
21 and we go to Health Canada, Environment Canada, the usual  
22 players, to see if they could provide technical assistance  
23 as federal authorities.

24 And so that's how the process unfolds. And  
25 following that, we work with -- if there's another

1 responsible authority, for example, Natural Resources  
2 Canada, we would draft the EA guidelines and determine the  
3 appropriate track for the environmental assessment to  
4 follow and the level of public consultation and whether  
5 it's a screening and comprehensive study of a panel  
6 review.

7 But that would happen at the time where we  
8 have a complete project description.

9 **MEMBER McDILL:** Thank you.

10 And for the intervenor who raised the  
11 question some time ago and for others who may be  
12 interested, is there a flow chart that describes that in  
13 sort of high level -- a high-level description of that  
14 process available?

15 **DR. THOMPSON:** Patsy Thompson, for the  
16 record.

17 The CNSC has an info document, and I can't  
18 remember the number of the document, but the document does  
19 explain the CNSC EA screening process and has some  
20 references to comprehensive studies. And so we do have an  
21 information document on our website that speaks to the  
22 process and who gets involved, when.

23 And you may recall, recently we present to  
24 the Commission improvements to our process and if --  
25 depending on the direction we get from the Commission, we

1 would update the information document and the staff  
2 procedures and guidance to proponents and stakeholders.

3 **MEMBER McDILL:** So while it might appear  
4 that different people are in charge at different times,  
5 there is a high-level plan that clarifies this for the  
6 public.

7 **DR. THOMPSON:** Patsy Thompson, for the  
8 record.

9 There is, and what we've done over the last  
10 several years for each environmental assessment is there's  
11 a project agreement with who does what and with time lines  
12 so that it provides a level of certainty and allows people  
13 to plan their involvement in the projects.

14 **MEMBER McDILL:** Thank you. Thank you, Mr.  
15 Chair.

16 **THE CHAIRMAN:** Anybody else? Mr. Harvey?

17 **MEMBER HARVEY:** One last question.

18 How do you feel when you got on your desk  
19 or you woke up in the morning and you've got one fifteen  
20 hundred gaps and 145 issues? I mean, it's not really my  
21 question, but starting from there, how do you address the  
22 problem?

23 I mean, I saw here that those issues have  
24 been regrouped -- been combined in a certain number of  
25 groups and with different schedules, different -- but how

1 do you start?

2 Do you have a special task group to do that  
3 or you are borne the issue along the road because there is  
4 other issues, I presume -- potential issues that will add  
5 to that during -- along the road, so how do you process?

6 **MR. LESCO:** Randy Lesco, for the record.

7 I'd ask Dr. Bushby, who's been responsible  
8 for our integrated safety review to talk about how we  
9 proceeded forward terms of prioritizing and planning for  
10 that work.

11 **DR. BUSHBY:** Stephen Bushby, for the  
12 record.

13 Just further to what Mr. Lesco said, there  
14 was a prioritization scheme that we put together. There  
15 was, I think, about 50 person years of effort that went  
16 into how do we best prioritize that, in terms of what's  
17 called a "value tree." And then there were different  
18 waitings that were assigned to these gaps, and that's how  
19 we ended up with the number of issues, and then how we  
20 actually grouped those into the five global issue groups.

21 With regard to changes that may happen to  
22 that, we're developing a very comprehensive change control  
23 mechanism by which we will make adjustments to our project  
24 execution plans as those changes are required.

25 **MEMBER HARVEY:** Can we be assured that most

1 of those issues would be solved during the licence period?

2 **DR. BUSHBY:** Stephen Bushby, for the  
3 record.

4 Yes. The way that we have established  
5 things is that we have clear lines of responsibility and  
6 additional staff that have been brought in to make sure  
7 that we are delivering on that portfolio of work. And so  
8 I am accountable to Dr. Walker, and the people who are  
9 responsible for the ISR are accountable to me.  
10 It's fully embedded within our program activity  
11 architecture. It is part of what we do on site.

12 **MEMBER HARVEY:** And what I would like then  
13 for the staff; is it easy for you to follow that to, well,  
14 evaluate the solution to each one of those issues?

15 **MR. ELDER:** Peter Elder, for the record.

16 I'm not sure it would be easy, but we have  
17 worked very closely to make sure that we understand what's  
18 being done, that they are giving us an annual detailed  
19 implementation plan for each year, so then we can use that  
20 -- before they start the work, and so that we can use that  
21 to design our verification plans.

22 And we've also identified going back to  
23 this high-level schedule as something that we can see a  
24 higher view to make sure that there is progress, and we  
25 don't get lost in all the little things.

1                   So we've come up with the strategy. We've  
2 looked in detail and agreed with making sure that there  
3 would be a change control process and what the rules and  
4 principles that that process has, and then AECL has gone  
5 in and put that in place.

6                   So we did a fair amount of thinking about  
7 how we were going to monitor it and make sure that it was  
8 able to monitor it and be able to report back to the  
9 Commission on a routine basis on how it was going. So  
10 most of the reporting will be based on that high-level  
11 schedule and progress against that, but then we made sure  
12 that we're getting the detailed information underneath to  
13 verify the individual progress where necessary.

14                   **MEMBER HARVEY:** And you are confident that  
15 -- like AECL said, that most of the issues would be  
16 completed, will be solved ---

17                   **THE CHAIRMAN:** Let me -- I want to jump in  
18 here because what's new about -- if I understand the  
19 process in front of us, what's really new, aside from the  
20 theme and the new mandate, is the licence conditions  
21 handbook where all those good plans are now put in place  
22 -- and I hope they're clear to both sides about the  
23 expectation -- and therefore annually there will be a  
24 report about performance which I recall in 2008, when I  
25 arrived, that was the big issue, the two sides could not

1 agree on clarity of requirement.

2 So my question, really, is everybody likes  
3 this licence conditions handbook, and believe that's a  
4 good vehicle for clarity of arrangement between the two  
5 organizations?

6 Let me start with AECL.

7 **MR. LESCO:** Randy Lesco, for the record.

8 The new process, the new licensing  
9 framework, provides clarity with respect to verification  
10 criteria that gives us a good understanding to making sure  
11 that we meet the expectations of CNSC staff, as well as  
12 the licence.

13 **MR. JAMMAL:** Ramzi Jammal, for the record.

14 Of course we like it, Mr. President,  
15 because we've put it in place.

16 With respect to clarity, your point is very  
17 valid, because right now is the -- both scoping the CNSC  
18 and scoping the licensee and their operation is clear, so  
19 it's not buried in a letter somewhere or on someone's  
20 desk. So the agreement is in place with respect to the  
21 action items, the closure criteria, and the regulatory  
22 powers that are stemming in order for the licensee to be  
23 in compliance.

24 And the licence conditions handbook is not  
25 a surprise because, as we were drafting the licence

1 conditions handbook, as part of the discussion and clarity  
2 that the licensee is fully aware of what is in the licence  
3 conditions handbook, and the amendments to the licence  
4 conditions handbook are reported on an annual basis as  
5 part of the report to the Commission.

6 **THE CHAIRMAN:** Okay. Dr. Barriault?

7 **MEMBER BARRIAULT:** Yes, just a very brief  
8 question: Université de Laval last summer did some  
9 sampling on your property. Were there any red flags as to  
10 the significance of the sampling they did?

11 **MR. LESCO:** Randy Lesco, for the record.

12 I'd ask George Dolinar to respond to your  
13 question.

14 **MR. DOLINAR:** George Dolinar, for the  
15 record.

16 Yes, the University of Laval was in the  
17 vicinity of the Chalk River site -- not actually on-site,  
18 but in areas around the site; Ottawa River, up in Deep  
19 River, and downstream as well. They conducted a similar  
20 program to what they did in 1999 and 2000, and again in  
21 2005.

22 AECL contracts them -- no surprise around  
23 licence renewal, you know, to give a bit of confidence to  
24 our results. And the quick answer to your question is  
25 nothing surprising was turned up in their report. Their

1 report is made available to the public through our  
2 website, in both French and English, and it will be  
3 posted, I believe, this week.

4 **MEMBER BARRIAUT:** Thank you. Does CNSC  
5 staff get a copy of this report?

6 **DR. THOMPSON:** Patsy Thompson, for the  
7 record.

8 We don't have a copy of that report, to my  
9 knowledge, but the work has been done by the Laval  
10 University was done here, but also for Gentilly-2 in the  
11 past, and the work has tended to confirm what the  
12 licensees have found. That was certainly the case for  
13 Chalk River, for the past program.

14 We have also done -- the CNSC staff went in  
15 on August 21<sup>st</sup> and took samples, alongside AECL staff, to  
16 provide confirmation of their monitoring results. And the  
17 CNSC lab analyzed those samples; they included,  
18 essentially, water, milk, and other things, and our  
19 results do confirm AECL's results for this year, but also  
20 for past years.

21 **MEMBER BARRIAULT:** Thank you.

22 Thank you, Mr. Chairman.

23 **MR. CHAIRMAN:** Anybody else?

24 **MEMBER TOLGYESI:** You mentioned that  
25 initiatives to improve the safety culture at NRU, you were

1 doing lots of surveys; quarterly sample surveys, bi-annual  
2 surveys, periodic safety culture survey. That's quite a  
3 bit. I think you will be -- I mean, you will have lots of  
4 work to do, just to read them and evaluate them and pull  
5 some consequences.

6 But is somewhere a public awareness  
7 progress survey? You know, because what we are talking,  
8 that public awareness about nuclear industry, nuclear  
9 energy, et cetera, how you are seen by the citizens. I  
10 didn't see it. Is there somewhere?

11 **MR. WALKER:** Bob Walker, for the record.

12 When Denise Carpenter from the CNA  
13 reported, I would highlight that AECL is a member of the  
14 Canadian Nuclear Association so we do rely, as a member,  
15 on the surveys and polling that's done by the CNA to look  
16 at attitudes towards nuclear energy across Canada.

17 In terms of the surveys in the local  
18 community, I think we've got some lessons to learn, for  
19 example, the work done by the intervener, and we'll  
20 certainly use that as lessons as to what we may be able to  
21 do in the local community. Bu when we talk at the  
22 national level, we rely on the CNA to be our source of  
23 evidence.

24 **MEMBER TOLGYESI:** And the staffing, when  
25 you are talking, you were saying that you would like to

1 hire so many engineers, I think 40 or so, that you are  
2 right now at 32 or something like that. And what's the  
3 turnover now at NRU; manpower turnover?

4 **MR. LESCO:** Randy Lesco, for the record.

5 Perhaps I'd ask Dave Cox, if he could speak  
6 to current turnover associated with NRU.

7 **MR. COX:** Dave Cox, for the record.

8 There's been -- under the new NRU program  
9 -- there's been a lot of hiring of what we call "system  
10 responsible experts" who are engineers that are  
11 participating in our system health program, other  
12 engineers within the technical support unit itself, and  
13 also engineers that are now entering the training program  
14 for senior reactor shift engineers.

15 With this influx of new individuals into  
16 the organization, there's been some turnover but the  
17 turnover is quite modest in comparison and we're able to  
18 keep up with our intended augmentation of the staff in  
19 order to meet the new needs going forward to implement  
20 some of the important programs such as system health and  
21 equipment reliability.

22 **MEMBER TOLGYESI:** So you hire not  
23 necessarily because some employees are leaving but because  
24 you want to increase the staff for some specific purposes.

25 Is the hired employees are young qualified

1 engineers or, generally, what's the age, what's the  
2 experience of the new employees?

3 **MR. COX:** First of all, you are correct;  
4 this is an augmentation exercise to staff-up new elements  
5 of our program, really for equipment reliability and aging  
6 management. And many of the engineers that have been  
7 hired are new recent graduates or with a few years of  
8 experience. So they're bringing in lots of enthusiastic  
9 energy into the organization.

10 **MEMBER TOLGYESI:** You have a similar hiring  
11 also for trades or just the technical and engineering  
12 staff?

13 **MR. COX:** Dave Cox, for the record.

14 I can speak to nuclear operators for which  
15 we've just recently hired an additional 10 operators.  
16 That's beyond -- you know, that's outside of the  
17 engineering. I don't know if someone can help me out on  
18 trades. Certainly we have been hiring trades and are  
19 seeking some specialty individuals.

20 **MR. LESCO:** Randy Lesco, for the record.

21 As Dave Cox as indicated, our primary focus  
22 has been on technical staff to allow us to continue on and  
23 address our programs that we want to move forward like  
24 aging management, like system health. So that's been our  
25 focus area in terms of hiring.

1                   **THE CHAIRMAN:** Okay, last chance?

2                   I just have one maybe comment, you -- I  
3 understand you recently became a member of WANO, which by  
4 the way they do mention when we met with them recently in  
5 Vienna, that they did sort of an exception because you are  
6 a research facility not an MPP.

7                   So my question was, are you getting -- are  
8 you deriving a lot of kind of useful information out of  
9 them?

10                  **MR. LESCO:** Randy Lesco, for the record.

11                  Absolutely, they did a peer review early on  
12 this year and identified areas for which we have to  
13 improve on, and how they help us is through what we refer  
14 to as "technical support missions."

15                  We've just completed a technical support  
16 mission last week and we have another technical support  
17 mission being planned within the next couple of weeks  
18 where they bring expertise and work with our staff and  
19 identify areas for which we can improve in.

20                  **THE CHAIRMAN:** Okay. Mr. Jammal?

21                  **MR. JAMMAL:** Thank you Mr. Chair.

22                  Just we use the technology -- to answer Dr.  
23 McDill's question, and Dr. Thompson has the -- logged on  
24 to our website using an iPad and the document is Info-774  
25 but I'll pass it on to Dr. Thompson.

1                   **DR. THOMPSON:** Patsy Thompson.

2                   I've got nothing much more to add. It is  
3                   Info Document 0774 and it provides some of the definitions  
4                   of the terms we were using and provides information on the  
5                   CNSC process.

6                   **MEMBER MCDILL:** Is Mr. Hendrickson still in  
7                   the audience to pick that up? There we go.

8                   **THE CHAIRMAN:** Okay, I think we are done.  
9                   So this concludes the hearing. Thank you all for your  
10                  patience and participation and the Commission will  
11                  deliberate and we'll try to come up with a decision ASAP.

12                  Thank you. Merci beaucoup.

13                  --- Upon adjourning at 6:14 p.m./

14                  L'audience est ajournée à 18h14

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