Canadian Nuclear Safety Commission

Commission canadienne de sûreté nucléaire

Public Hearings

Audiences publiques

June 28, 2006

Le 28 juin 2006

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

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

Commission Members present

Commissaires présents

Mr. Alan R. Graham
Dr. Christopher R. Barnes
Dr. Moyra McDill
Dr. James Dosman

M. Alan R. Graham
M. Christopher R. Barnes
M^{me} Moyra McDill
M. James Dosman

Secretary: Mr. Marc A. Leblanc

Secrétaire: M. Marc A. Leblanc

General Counsel : Jacques Lavoie

Conseiller général : Jacques Lavoie

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Ottawa, Ontario

--- Upon commencing on Wednesday, June 28, 2006
at 8:34 a.m.

Opening Remarks

M. LEBLANC: Bonjour mesdames et messieurs. Bienvenu à l'audience de la Commission canadienne de sûreté nucléaire. The Canadian Nuclear Safety Commission will hold one public hearing today. The Commission meeting will be held tomorrow at 8:30 a.m.

Mon nom est Marc Leblanc. Je suis secrétaire de la Commission et j'aimerais aborder certains aspects touchant le déroulement de cette audience.

During today's business we have simultaneous translation. Des appareils de traduction sont diponibles à la réception. La version française est au poste 8 and the English version is on channel 7. If you would, please keep the pace of speech relatively slow so that the translators have a chance of keeping 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 utilisée par le participant à l'audience publique.

Les transcriptions devraient être disponibles sur le site web de la Commission dès la semaine prochaine.

To make the transcripts as meaningful as possible we would ask everyone to identify themselves before speaking. As a courtesy to others in the room, please silence your cell phones.

Monsieur Graham présidera l'audience publique d'aujourd'hui.

Monsieur Graham.

THE CHAIRPERSON: Thank you very much, Monsieur Leblanc, and good morning, everyone, and welcome to the public hearings of the Canadian Nuclear Safety Commission.

I am Alan Graham. President Keen has assigned me to preside over the hearings today.

I would like to begin by introducing the members of the Commission that are with us today.

On my right is Dr. Moyra McDill and Dr. Christopher Barnes and on my left is Dr. James Dosman.

In addition to Mr. Marc Leblanc, the Secretary of the Commission, we also have Mr. Jacques Lavoie, General Counsel of the Commission, who is also with us today at the podium.

I would like to note that the Commission is

still on enhanced security status, as are many of the facilities which we regulate. As such, I will, as appropriate, take measures to ensure that security matters of a sensitive nature are not discussed in public and will, if necessary, move in camera, which is a closed session, at any time for discussions on security matters.

06-H8 / 06-H8.A

Adoption of Agenda

THE CHAIRPERSON: Before adopting the agenda, please note that eight supplementary Commission Member Documents, which are CMDs, were added to the agenda after publication on May 31st, 2006 as listed on the updated agenda.

With this information, I would like to call for the adoption of the agenda by the Commission Members as outlined in Commission Member Document 06-H13.B.

Do I have concurrence?

For the record, the agenda is adopted.

Hearing Day Two:

Atomic Energy of Canada Limited (AECL):

Application for the renewal of the

Operating licence for the nuclear

Research and test establishment

Located at the Chalk River Laboratories

THE CHAIRPERSON: On the agenda today is Hearing Day Two on the matter of an application by Atomic Energy of Canada Limited for the renewal of the operating licence for the nuclear research and test establishment located at Chalk River Laboratories.

MR. LEBLANC: This is Public Hearing Day Two. The first day of the public hearing on this application was held on April 26th, 2006. The notice of public hearing 2006-H04 was published on February 2nd, 2006.

The public was invited to participate either by oral presentation or written submission. May 29th, 2006 was the deadline set for filing by intervenors. The Commission received 37 requests for intervention.

Presentations were made on Day One by the Applicant, Atomic Energy of Canada Limited under Commission Member Documents, or CMDs 06-H9.1 and 06-H9.1A to H, 9.1G and by Commission staff under CMDs 06-H9 and H9.A. CMDs H9.36 to H9.38 were received shortly after the deadline. Based on its consideration of these matters, a panel of the Commission accepted these interventions.

The Commission strongly urges all parties to file their submissions within the deadlines set in the Public Notice of Hearings in compliance with the CNSC Rules of Procedure.

June 21st was the deadline for filing of supplementary information. I note that supplementary information has been filed by Atomic Energy of Canada Limited, CNSC staff, as well as intervenors.

THE CHAIRPERSON: I would like to start the hearing by calling on the presentation from Atomic Energy of Canada Limited as outlined in Commission Member Document 06-H9.1H.

I will turn to Mr. Van Adel, President and Chief Executive Officer. Mr. Van Adel, welcome.

06-H9.1H

Oral presentation by Atomic Energy of Canada Limited

MR. VAN ADEL: Good morning, Mr. Chair and Members of the Commission.

My name is Robert Van Adel and I'm the President and Chief Executive Officer of Atomic Energy of Canada Limited. With me today are Dr. David Torgueson, Senior Vice-President and Chief Technology Officer; Brian McGee, Vice-President of the Nuclear Laboratories and members of the Chalk River Management Team.

We are here today seeking Commission approval for renewal of the Chalk River Laboratories' operating licence. We view continued operation of Chalk

River as essential to our industry.

As I stated at the Day One Hearing, we recognize and fully accept our obligation to demonstrate to the Commission that we have operated the site safely and will continue to do so with due regard to the environment, security and Canada's international obligations.

I want to assure the Commission that as President and CEO, I take these obligations very seriously, as does our Board of Directors.

I'm very pleased to update the Commission on an item that I mentioned at Day One of the Hearing. On June 2nd, 2006, the Honourable Gary Lunn, Minister of Natural Resources, announced federal government funding for the first five years of the program to address Canada's nuclear legacy liabilities at AECL's sites. Minister Lunn visited Chalk River. He toured the facilities and made the announcement on site and then spent time meeting with the employees.

Of the total amount of $520 million announced, about $320 million is allocated for Chalk River for the five-year period. Funding for the first year is $40 million and peaks at just over $80 million in year three.

Commissioners, this new funding is a major

step forward in dealing with these waste and decommissioning obligations. AECL has been and will continue to be very open in our plans and in our accounting for how these funds are spent. We intend to deliver value for money.

I would also like to take this opportunity to thank all of the stakeholders who have either travelled here today to participate in the licence renewal process or who have submitted written interventions. We are very appreciative of the support and interest from our community stakeholders.

In closing, Mr. Chair, I want to reiterate to the Commission that AECL is deeply committed to the safe and responsible operation of our Chalk River facilities. We recognize our obligations to uphold the trust and confidence of both this Commission as well as the public and we will not compromise that trust.

I will now turn it over to Brian McGee to provide a further update. Thank you very much.

MR. McGEE: Good morning, Mr. Chair, Members of the Commission.

My name is Brian McGee and I'm the Vice-President of AECL's nuclear laboratories as well as being the site licence holder for the Chalk River Laboratories. With me today are members of the AECL team in support of

our application for the renewal of Chalk River site licence for a period of 63 months.

At Day One we provided an overview of our performance during the present licence period and the key initiatives we will be undertaking during the proposed licence period.

My presentation today will focus on the key topics shown on the slide now on display; specifically, information requested during the Day One Hearing, an update on progress we've made on NRU, information that we offer to address some of the topics raised in intervenor CMDs and updates on other items we believe are of interest to the Commission; specifically, the Environmental Stewardship Council and the draining of the NRX bays.

With respect to information regarding intervenor topics, we identified a number of common themes in intervenor submissions. To facilitate discussion of those topics today, we provided information in our CMD that we trust would be useful. We also distributed our CMD directly to all intervenors in advance of the Day Two Hearing.

I want to restate the commitment I made previously regarding the safe operation of our site. I am accountable to ensure that our operations meet regulatory requirements and are carried out safely and with due

regard to the environment, security and Canada's international obligations. The entire management team and our staff are committed to the safe operation of this site, and as Mr. Van Adel stated, we have the full support of AECL's Executive and the Board of Directors.

Our Day Two CMD includes information on the topics shown on this slide. Each of these topics was discussed at the Day One Hearing and we committed to provide additional information for Day Two.

I want to touch on one topic in particular; namely, the new licence conditions. We submitted formal comments on the draft licence contained in CMD 06-H9, CNSC staff's CMD for Day One. We then met with CNSC staff to discuss our comments and those discussions were very fruitful.

We received a subsequent version of the licence as part of CMD 06-H9.B, CNSC staff's CMD for Day Two. We provided further comments to CNSC, focussing primarily on one area. We remain concerned about parts of the licence conditions associated with criticality safety. We fully endorse proposed licence condition 14.2, Part 1, which requires us to document our criticality safety program in accordance with international standards.

We have practised criticality safety at Chalk River from the earliest days of the site and we have

confirmed our practices are generally consistent with international standards. We agree with the merits of documenting our program in accordance with those standards.

Section 14.2, Part 2, contains additional requirements that we feel need more discussion before they become licensed conditions. We expect to discover issues of practicality as we document our criticality safety program to meet these new conditions and we've discussed the CNSC staff's need for flexibility in their initial implementation.

Should we encounter situations where the literal interpretation of the new requirements is not consistent with the underlying intent or does not achieve useful safety benefits, we will come back to the Commission seeking amendments to the licence.

Another important item on the list of new licence conditions is the NRU pressure boundary material analysis. This was discussed at Day One in terms of the need for destructive testing. I will come back to this in a few minutes when I update the Commission on progress on NRU.

Significant progress has been made on NRU improvements since Day One. CNSC staff's licensing strategy for continued operation of NRU contains 11 short-

term criteria that must be met by July 31st, 2006. We have addressed all 11 criteria by either completing the necessary actions or submitting action plans with specific milestones and completion dates. Our plans are with CNSC staff for their review and we expect to achieve CNSC staff acceptance of these plans by July 31st.

We have also submitted our response to CNSC staff's inspection of two of the NRU safety upgrades. We accept each of the reports' findings and we are taking steps to deal with each one. We have had dialogue with CNSC staff in submitting our response and we are modifying our plan accordingly.

We continue to make excellent progress on the NRU improvement initiative. We will not lose focus on this improvement project as we deal with other NRU issues. The NRU improvement initiative is central to our strengthening of operations and maintenance practices and the achievement of excellence in operations and maintenance practices are central to our goals of achieving world-class safety culture in overall operational performance excellence.

We continue our efforts to determine the source of tritium in the plume downgrade of NRU. We have drilled additional wells around NRU to help in the diagnosis. We have completed visual inspections of the

NRU bay and inspections using camera and dye techniques.

We have enhanced our inspection methods and have moved ahead with the new technique. We will be keeping CNSC staff informed of our progress.

The subject of the NRU pressure boundary was discussed at Day One and we have had discussions with CNSC staff on this topic since that time.

One of the short-term actions for continued operation of NRU is submittal of an action plan to deal with CNSC staff's concerns in this area. We have submitted this action plan.

A demonstration of an adequate pressure boundary program is achieved through a number of complementary activities. These include a condition assessment to identify any life-limiting factors; an ongoing periodic inspection program that meets current code requirements and a plant aging program that considers all aspects of operation to ensure continued fitness for service into the future.

We recently submitted to CNSC staff the periodic inspection program for the NRU main heavy water system. The program incorporates CNSC staff comments made on an earlier draft.

We have completed and are about to submit the periodic inspection program for the U1 loop in NRU,

one of the high pressure experimental loops. We are implementing these programs and we are about 95 per cent through the inspections for the main heavy water systems.

With regard to the specific issue of destructive analysis, as we mentioned in Day One and clarified in our Day Two CMD, we have conducted destructive testing and analysis to assess the fitness for service of some components. Such analysis is only one aspect of the overall pressure boundary safety case which includes comprehensive condition assessments, detailed analysis and ongoing inspections and non-destructive testing.

We have had discussions with CNSC staff following the Day One hearing on pressure boundary issues. We believe we have an agreed path forward although there will still be much dialogue as we make further submissions on our inspection programs and classification and registration of pressure boundary systems.

Some intervenors' submissions to the Commission identified several topics where we felt it would be helpful for AECL to supply information. We believe such information could address some intervenor questions and could facilitate discussion later in the hearing. Our CMD addresses the topics listed on this slide and the next one.

As I mentioned previously, we distributed our CMD to all intervenors so they would have information in advance. We offered to discuss any items and asked if further information was needed prior to today's hearing.

We recognize that intervenors' submissions are directed to the Commission and not to AECL. Therefore, we limited our discussion to providing factual information and did not offer opinions on matters of CNSC policy.

Regarding public consultation, we have recently completed a major step to improve the information available to the general public regarding our licensed operations.

We have revamped our general website making safety, environment and regulatory items more prominent and more accessible. This slide shows a screen capture of the new AECL website home page. In the centre of the page, you can see a link to the environmental performance and another link to licensing activities. You can click on either of these links to get more detailed information.

This slide shows one of the pages from the environmental performance section. It contains charts showing liquid and airborne effluent releases over time.

The new website contains other information that will also be updated regularly. We encourage

feedback on the website and we trust it will be a useful vehicle for reporting on our performance. However, we recognize that this is primarily a one-way information tool and we are implementing other communication vehicles that will be much more interactive.

One such communication vehicle is the Environmental Stewardship Council. We are moving forward with its implementation and we have prepared draft terms of reference and draft objectives for discussion. We have planned for the first meeting to take place this summer. We have hired a professional facilitator to ensure the process is neutral.

We have invited a very diverse range of groups to participate on the council and, as communicated to intervenors and to CNSC staff, we regret the statement in our CMD indicating that all invited groups had already agreed to participate on the council. This is not yet the case for all groups, although we hope it will be.

The groups invited to participate include the local Algonquin First Nations, the Upper Valley -- Upper Ottawa Valley Chapter of Ducks Unlimited, Concerned Citizens of Renfrew Country, Ottawa River Keeper, Ottawa Vanier Greens, United Townships of Head, Clara and Maria, the Town of Laurentian Hills, the Town of Deep River, the Town of Petawawa, the City of Pembroke and the

municipalities in the County of Pontiac.

To date, Ducks Unlimited, the Town of Deep River and the Town of Laurentian Hills have accepted our invitation to be full participants and the Algonquin First Nations have agreed to participate as observers.

We are committed to making this council work. I believe it will be a major breakthrough in improving communications with our communities and with the interest groups.

The last item I would like to discuss on our progress is the draining at the NRX bays. The NRX bays are a known source of leakage and I am pleased to report that the water is currently being removed from these bays. We see this as a major step forward in eliminating the source of one of the identified plumes.

In conclusion, Mr. Chair and Members of the Commission, we believe that we have operated Chalk River Laboratories safely during the present licence period with due regard for the environment, security and Canada’s international obligations. We are committed to the safe operation throughout the proposed licence period.

We have met CNSC requirements in most areas and where there are outstanding issues we have submitted action plans to CNSC staff. We have made improvements in many areas and we are committed to continuing to do so and

we are working towards exceeding CNSC requirements. We believe we meet CNSC Guidelines for the 63-month licence period for which we have applied.

Finally, I want to reinforce the commitment I have made to you on a previous occasion. I am accountable for the safe operation of AECL's licensed nuclear facilities. This is an accountability I take very seriously.

We are on a journey that will lead to overall operational excellence. It would be natural to ask if our passion for achieving operational excellence will wane if we are granted the requested a 63-month licence. The requested licence period is part of our journey but it is in no way our destination. The requested 63-month licence is an enabler for our performance improvement but our commitment to this journey will not wane.

We will continue striving to become a model of safety culture excellence. We know that a strong safety culture is central to our goal of overall operational excellence and we won't be satisfied with anything less.

We will be relentless in developing a strong organizational safety culture and in pursuing excellence and safety performance.

I would like to thank you very much for your attention and my management team and I would be pleased to answer your questions.

THE CHAIRPERSON: Thank you very much, Mr. McGee and Mr. Van Adel.

And prior to opening the floor for questions, I would like to move to the presentation from CNSC staff as outlined in CMD 06-H9.B. I will turn to Barclay Howden, Director General, Directorate of Nuclear Cycle and Facilities Regulations.

Mr. Howden, you may proceed.

06-H9.B
Oral presentation by
CNSC Staff

MR. HOWDEN: Thank you. Good morning, Mr. Chair, Members of the Commission. For the record, my name is Barclay Howden.

With me today are Mr. Gerald Crawford, Acting Director, and Mr. Fred Taylor, CNSC Single Point of Contact, both within the Chalk River Laboratories Compliance and Licensing Division, plus the rest of the licensing team for this facility.

CNSC staff has prepared a recommendation based on the review of Atomic Energy of Canada Limited’s

Application to renew the Chalk River Laboratories nuclear research and test establishment operating licence that will expire on July 31st, 2006.

I will now pass the presentation over to Mr. Taylor who will provide you with CNSC staff's recommendation for the licence renewal.

MR. TAYLOR: Good morning, Mr. Chair, Members of the Commission. For the record, my name is Fred Taylor, CNSC's Single Point of Contact for the Chalk River Laboratories.

CNSC staff has assessed the application and the performance of the applicant and has developed a position which is documented in CMD 06-H9 and CMD 06-H9.B. The position includes a recommendation that the Commission approve the issuance of the proposed 63-month licence to operate the CRL site.

To outline our presentation, I will first provide a short overview of AECL's licence renewal application. I will then highlight the supplementary information as included in CMD 06-H9.B for Hearing Day Two. Finally, CNSC staff will present changes to the proposed draft licence along with conclusions and recommendations for a licence renewal.

AECL's nuclear research and test establishment operating licence for the Chalk River

Laboratories expires July 31st, 2006. ACEL has applied to have the operating licence renewed for a period of 63 months.

CNSC staff has reviewed the application and concludes that it meets requirements and agrees with AECL's request for a licence period of 63 months.

On the following five slides, CNSC staff provides supplementary information in the safety areas of performance assurance, emergency preparedness, radiation protection and environmental protection.

A bit of information is provided on AECL's quality management and operating experience. CNSC staff's rating of this safety area remains unchanged from CMD 06-H9.

CNSC staff's conclusions from CMD 06-H9 that AECL Quality Assurance Program at CRL does not yet meet expectation remains unchanged. The findings of the 2006 NRU upgrades audit further supports this conclusion. CNSC staff recognizes that AECL has been taking measures to improve the managed processes and to apply greater management oversight at CRL and expects an improving trend in the Quality Assurance Program and its implementation during the proposed licence period.

Since CMD 06-H9 was written, AECL has completed three more of 13 OPEX initiatives and made

significant process on the four initiatives that now remain open.

CNSC staff completed in May 2006 a scheduled inspection of AECL's Nuclear Emergency Preparedness Program for the CRL site.

CNSC staff met with key personnel of the CRL emergency preparedness organization and inspected several onsite and offsite emergency facilities. The scope of this inspection also included emergency response training, qualification of personnel and documentation.

CNSC staff concludes that both the program and its implementation have improved since the 2002 inspection and continue to meet requirements and CNSC expectations. Also, CNSC staff has assigned an improving trend for emergency preparedness compared to the previous licensing period based on its most recent inspection.

CNSC staff's rating of the Radiation Protection Safety Area and staff's conclusion, presented in CMD 06-H9, remain unchanged. The 2005 dosimetry results for CRL workers are updated in this table and are within the range observed over the last five years. No CRL worker received an effective dose in excess of regulatory limits, as indicated in the table.

CNSC staff concludes that AECL's Radiation Protection Program meets regulatory requirements and will

continue to do so.

Additional information to that in CMD 06-H9 has been received that is relevant to doses to critical groups. CNSC staff's rating of the Environmental Protection Safety Area and CNSC staff's conclusion presented in CMD 06-H9 remain valid.

The regulatory limit for dose to the public is 1000 microsieverts per year. This table shows that the 2005 doses received by the critical groups of residents around the CRL site are well below this limit and are within the range observed over the last five years.

CNSC staff would like to note a correction to CMD 06-H9-B, page 8, where the effective dose from tritium in the milk pathway to the identified critical group should have been 0.3 microsieverts per year to an infant instead of 0.1 microsieverts per year.

This table shows tritium concentrations in milk at two of the towns near the CRL site. Tritium concentrations are elevated above background concentrations but these are well below the 7,000 becquerels per litre Health Canada Drinking Water Guideline.

CNSC staff provides additional information on two matters relevant to the renewal of the site licence: waste management and the NRU Reactor. The next

two slides briefly outline these two matters.

In CMD 06-H9, CNSC staff indicated a lack of contingencies for storage reserves for solid radioactive wastes in waste management Area B. In May 2006 AECL advised CNSC staff that there is a possibility the modular aboveground storage buildings and waste management Area H will be full before the shielded modular aboveground storage buildings are available.

The Commission approved the environmental assessment and will now proceed -- the *Nuclear Safety and Control Act* to consider AECL's application to construct and operate Shielded Modular Above-Ground Storage in Waste Management Area "H" at CRL.

Until a Shielded Modular Above-Ground Storage becomes available AECL is proposing interim storage in Waste Management Area "A" in a temporary structure consisting of an aluminium frame covered with a polymer membrane.

CNSC staff remains concerned that there is a lack of planning for storage reserves for solid waste at CRL.

The NRU Reactor's operating performance was detailed in CMD 05-H-28 submitted to the Commission for NRU's seven-month operating licence extension. CNSC staff is updating information pertinent to the NRU Reactor as

follows: NRU's operating performance in Appendix C; NRU improvement initiatives program plan in Appendix D; and the NRU life extension program in Appendix E.

CNSC staff is of the opinion that the risk posed by the continued operation of the NRU Reactor is acceptable, contingent on AECL's adherence to the conditions detailed in the licensing strategy and outlined in Appendices C, D and E of this CMD and CMD 06-H9.

To improve the CNSC's regulatory oversight of CRL and to bring the licence in line with other Class 1 Licences a number of new and revised conditions are proposed. Since Hearing Day One, some of the proposed conditions were modified and new conditions were added. The proposed licence which is attached to CMD 06-H9.B is similar to the draft presented at Hearing Day One except for changes described in Appendix F of CMD 06-H9.B. A number of new or modified conditions have been proposed for: NRU staffing, organization and operation, safety analysis and maintenance; environmental protection, fire protection, pressure boundary, criticality safety, codes and standards, and waste management.

Other modifications to the licence were required to effect minor editorial changes and to update the information. These changes to the licence conditions are intended to improve CNSC staff's implementation of the

CRL compliance program.

CNSC staff would like to note a correction to condition 2.3.4.D on page 4 of the licence. The text should have read “NRU Health Physicist” instead of “Senior Shift Engineer”. The corrected condition 2.3.4 of the proposed licence is shown in bold on this slide.

In conclusion, CNSC staff presented these conclusions in CMD 06-H9 and they remain valid. AECL’s application for an operating licence meets the requirements of the *Nuclear Safety and Control Act* and its regulations.

The requirements of CEAA were previously fulfilled. Therefore, no further environmental assessment under CEAA is required.

AECL is qualified to carry on the activities that the licence will authorize, and AECL has made and CNSC staff is confident AECL will continue to make adequate provisions for the protection of the environment, to health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.

CNSC staff further concludes that the overall performance of AECL at CRL during the current licence period meets requirements and will continue to

meet requirements during the term of the proposed operating licence. AECL has submitted adequate documentation in support of the proposed continued operation at CRL.

AECL is currently in compliance with CNSC's cost recovery fees and regulations. The comprehensive preliminary decommissioning plan, the basis for the cost estimate and the five-year operation implementation plan form a sound basis for the eventual decommissioning of the CRL site. In addition, the communication and public consultation plan on the CPDP is acceptable. And finally, CNSC staff concludes that AECL's proposed financial guarantee for decommissioning the CRL site is acceptable.

Recommendations: One, CNSC staff recommends in CMD 06-H9.B that the Commission accepts staff's conclusion that the requirements of CEAA were previously fulfilled and that an environmental assessment under CEAA is not required. The comprehensive preliminary decommissioning plan, the basis for the cost estimate, the five-year operation implementation plan form a sound basis for the eventual decommissioning of the CRL site, and AECL's proposed financial guarantee for decommissioning the CRL site is acceptable. The proposed draft licence attached to CMD 06-H9.B of the CRL site is acceptable. AECL is qualified to carry on the activities that the

licence will authorize. AECL has made and CNSC staff is confident that AECL will continue to make adequate provisions for the protection of the environment, to health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.

CNSC staff further recommends: Two, Commission accepts the financial guarantee for CRL decommissioning.

Three, submitting an interim report to the Commission in fall 2008.

Four, where the licence contains a condition that permits or constrains a particular activity by means of a phrase such as “Approval of the Commission or a person authorized by the Commission” the Commission delegates the authority to staff to make an approval or similar under a licence condition not requiring an amendment.

And five, finally, CNSC staff recommends that the Commission approve the issuance of the proposed Nuclear Research and Test Establishment Operating Licence valid for 63 months from August 1st, 2006 until October 31st, 2011.

This completes my presentation. I now return the floor to Mr. Howden.

MR. HOWDEN: Thank you, Mr. Taylor.

Mr. Chair, that concludes staff's presentation and staff is prepared to respond to questions from the Commission.

Thank you.

THE CHAIRPERSON: Thank you, Mr. Howden.

Just before we do open the floor for questions, when Mr. McGee finished I didn't revert back to Mr. Van Adel for comments.

Did you have any other comments? Maybe I was hasty. I'm sorry.

MR. VAN ADEL: Bob Van Adel for the record. Not at this time, Mr. Chair.

THE CHAIRPERSON: Thank you.

Okay. We will now open the floor for questions from the Commission members to either AECL or CNCS staff.

Dr. Barnes, if you would like to start.

MEMBER BARNES: I have quite a lot of probably fairly precise questions, since we're now on Day Two, for clarification and I would despite the amount of paper we have, I would certainly I think complement AECL on being very specific and addressing the issues from Day One in a very systematic way, including the comments from intervenors. I think this is very helpful for the process

and I'm sure it's helpful for the intervenors to see written responses like this.

So I'll start on the staff CMD 06-H9.B on page 4, 3.1.3, event reporting requirements and operating experience, OPEX. The Table 3.1 at the bottom of that page shows the increase in events reportable to CNSC from '02 to '05 from eight to 19 and then up to halfway through this year we're already at 18. And in the sort of note below it indicates that there are eight more unplanned events for 2006 and that possibly some of the increase is due to the reclassification of events as reportable.

So I have two questions perhaps to staff. Are the eight that you refer to there included in that 18 and could you explain to what extent that number, 18, which one might project up to 36 or more by yearend, which would be a very significant increase over the other numbers for the previous four years, to what extent that increase is merely a reflection of reclassification?

MR. HOWDEN: Thank you. Barclay Howden speaking for the record.

With regards to the numbers, the eight that have been reclassified as reportable are included in the numbers. And for the second question, Dr. Barnes, could you repeat it once again, please?

MEMBER BARNES: I was trying to assess to

what extent that increase -- and particularly if one assumes that the 18 up to the 1st of June, if that's proportional through the year, might well approach something like 40 for the year -- to what extent, if one speculates that it might be 40, is it really due entirely to the reclassification of events as reportable, which you indicate in the note there, or to what extent is this a more serious situation?

MR. HOWDEN: Barclay Howden speaking for the record.

Gerald Crawford, the Acting Director, will respond to that.

MR. CRAWFORD: The reporting of unplanned events in previous years has seemed to increase and staff does not believe that this is necessarily because of the poor performance of AECL. There are more stringent identifying -- there's more stringent requirements to identify unplanned events and there's been a lot of training at AECL, the licensee, to identify as reportable, events.

At the end of 2006 we'll be in a better position to say whether or not this trend is going to tail off but at the moment we are keeping our eye on it. But we do believe that it is as a result of enhanced training and enhanced awareness on the site that CNSC staff do want

to be told immediately -- and if there's any -- of any event. And certainly if there's any doubt as to whether an event is reportable or not reportable, AECL are now reporting it.

THE CHAIRPERSON: So at AECL there's no confusion in your mind what's reportable and what isn't from now on?

MR. McGEE: Brian McGee for the record.

Commissioner, there's no confusion in our mind. As the events occur there's often a time where there's a systematic review to determine if they are reportable, and very often dialogues with staff, but I want to support CNSC staff's observations in this area.

We're driving a culture -- and this is a fundamental aspect of safety culture -- we're driving a culture of openness, transparency and open reporting. So frankly, there is an aspect of this where through a review of previous events historically on the part of both staff and CNSC staff and AECL staff there have been some events from the past that have been reclassified but we are driving a culture where I expect to see more reportable events. What that's intended to do and that will -- and not just reportable events but event reporting at all levels through openness where it would create a culture where it's okay to raise issues where concerns are raised

through greater management oversight of performance, and that's conducive to achieving the performance excellence that we're striving to achieve. So we expect to see that trend increase in the near term, I would say, based on industry experience, for the next two to three years. But what that will do is allow us to change and shift performance to give greater margins of safety against other more consequential level events.

MEMBER BARNES: Thanks.

I would like to turn to the issue of waste management and cover about three somewhat different aspects.

On the staff CMD on page 9 staff reports that AECL is proposing -- well, first of all, staff remains concerned that there is a lack of planning for storage reserves of solid waste at CRL. That's three lines up from the bottom of page 9.

The sentence before that, and we heard this from AECL in their report, is AECL is proposing interim storage in waste management area H in a temporary structure consisting of an aluminium frame covered with a polymer membrane. This is until such time as the SMAGS storage buildings are available. So could you remind us when those SMAGS are going to be available? What is the timeframe when you'll be using this aluminium frame

system?

MR. McGEE: Brian McGee, for the record. I'll turn that question to Bill Kupferschmidt please.

DR. KUPFERSCHMIDT: Bill Kupferschmidt, for the record; General Manager Decommissioning and Waste Management.

The decision is coming forward to the Commission shortly with regard to getting approval for the construction of this facility. We anticipate having the shielded MAGS available to us in the late fall. So what we're talking about is having access to temporary space for a few short months.

MEMBER BARNES: All right.

To CNSC staff, is this really an acceptable structure, the interim aluminium polymer system?

MR. CRAWFORD: For the record, Gerald Crawford.

Yes, providing that we've written to AECL and said that this is acceptable as a temporary measure, provided it meets the requirements of the existing safety case that was presented to the Commission staff for the construction and operation of the original MAGS buildings.

MEMBER BARNES: And if I jump now to a couple of questions from the AECL document?

On page 7 running onto page 8, which is 2.7, dealing with non-radiological liquid effluent, there is a -- Table 2.2 is a summary of the 2005 exceedences which list a total of 30 which contrasts to those in 2004 of 21 whereas the target was actually set at 17.

So to AECL, could you give again an explanation, if you would, of why we appear to have a significant increase in these exceedences through ’05, and could you give some indication of what your target is for 2006?

MR. McGEE: Brian McGee, for the record.

I’ll ask Ray Lambert to answer that question.

MR. LAMBERT: Ray Lambert, for the record; Director of Safety and Environment.

First, let me clarify that the exceedences that we are referring to is exceedences of AECL admin levels essentially to trigger investigations.

We set a target of 17 with an endeavour to try to reduce our number of exceedences of mercury emissions through various initiatives we were undertaking in the waste treatment centre last year. We didn’t achieve the target in terms of a number of exceedences but we did achieve a reduction in the level of mercury in terms of the total loading, and this is because the target

was -- the exceedences were not as dramatically higher than the admin level we have set. So we're continuing to take initiatives this year to further reduce the mercury emissions and hopefully we'll see the continued reduction of our exceedences in future years.

MEMBER BARNES: So what is the target for 2006?

MR. LAMBERT: 2006 I'm talking off the top of my head, but I believe we're setting a similar target that we did last year of 17.

MEMBER BARNES: And would you know what the exceedence level is at this point in the year?

MR. LAMBERT: Unfortunately no, I don't, but I can have that number for later on this morning.

MEMBER BARNES: Okay.

And staff, do you have any comment on this sort of performance regarding exceedences and specifically mercury and the statement that the efforts proved less successful in reducing the number of times exceedences occurred? That's at the top of page 8.

DR. THOMPSON: Patsy Thompson for the record, Director of the Environmental Assessment and Protection Division.

The parameters that are being monitored by AECL are the ones that are indicative of the operations on

the site as well as the ability to treat and remove those chemicals before they are discharged.

Traditionally, the targets that had been -- the internal limits that had been set by AECL were exceeded on numerous occasions with little action being taken by the licencee. That behaviour and that trend has changed significantly over the last two or three years and AECL has put a significant amount of effort in terms of identifying the sources of substances to the effluent and removing the sources where possible.

Although there is a number of exceedences that are being reported, if we look at the trend in terms of concentrations and loadings to the environment over the last several years, despite the exceedences there has been a significant reduction in what is being discharged to the river. So there is a pattern of improvement and we expect that pattern of improvement to continue because AECL has put significant resources in terms of finding the sources of contaminants in the various facilities and dealing with the sources.

MEMBER BARNES: But still in 2005 the number of exceedences is almost double the target.

DR. THOMPSON: Patsy Thompson for the record.

That’s correct but the levels -- the

concentrations that produce the exceedences are very small and not drastically above the limits that have been set.

MEMBER BARNES: Okay. If I can turn to a different issue under waste management, and that is the issue addressed on page 21 and 22 under 4.2.3 of the AECL document CMD? This refers to long-term management of radioactive waste, and it comes up in a couple of other places in the staff document too.

So under 4.2.3 there is a sort of a general discussion of what AECL plans to do, perhaps in the longer term, with subsurface disposal on site for lowering particularly intermediate level waste but this is never really specified. It refers to the earlier work of the siting task force and work by Geological Survey and Natural Resources Canada of both the 1970 studies and 1990 studies. And the bottom of page 21 refers to the new funding that been committed by the Government of Canada of $520 million and specifically $320 million.

So I was looking to find in these licensing documents to what extent work will be done to address onsite subsurface disposal of in particular intermediate level waste. Could AECL clarify this further?

MR. McGEE: Brian McGee for the record.

I'll ask Bill Kupferschmidt to answer that question.

DR. KUPFERSCHMIDT: Bill Kupferschmidt for the record.

We are currently assessing the information that was previously garnered on the site as part of the work that was done in the ‘70’s, ’80’s, and ’90’s for the Geological Survey of Canada, as well as with the siting task force and the work that was done with the CANDU Owners Group for looking at the -- assessing the site for a potential repository for low and intermediate level waste.

So we are in the midst currently of reassessing that data and reactivating some work with regard to borehole studies. The program over the next while will be assessing that information. We’ll be, as well, developing a safety assessment to take a look at the potential for this site from a geology perspective on water flow; looking at the waste forms; the waste quantities; inventory, et cetera, and then proceeding with the actual finalization of that assessment. At which point we would then come to our own conclusion about whether or not such a repository is in fact a go forward approach for the site and at that point we would then obviously engage the CNSC with regard to our intent to proceed, but only after we’ve completed the next number of years of analysis of the potential for this site for a

repository.

MEMBER BARNES: And what sort of timeframe do you see this analysis taking place?

DR. KUPFERSCHMIDT: Bill Kupferschmidt for the record.

We're looking at in the neighbourhood of about five years for this analysis to be done.

MEMBER BARNES: And would you anticipate that if you did choose to go this route that this would automatically trigger an EA?

DR. KUPFERSCHMIDT: Bill Kupferschmidt for the record.

As for all of the projects that we have onsite of a significant nature, we would be proceeding with an environmental assessment on a project-by-project basis; this, like others that we've also conducted.

MEMBER BARNES: To staff, would you have any comment on this? And maybe I could just also ask you to comment, because there is discussion, for example, on page 23 4.3, the issue of single versus bundled EAs, single project versus as Mr. Kupferschmidt mentioned, project-by-project EA.

MR. HOWDEN: Barclay Howden speaking.

I'm going to introduce some information on this particular topic and then ask Dr. Patsy Thompson to

talk about the EA regime.

In terms of the long term management of waste at the site, one of the things that we and the Commission required from AECL was the preparation of the Comprehensive Preliminary Decommissioning Plan which has been produced. That is a plan unto itself looking into the future, but also was set up to allow for costing, such that a financial guarantee could be identified and then properly put in place.

Additionally, we put in the requirement that this plan has to be operationalized and that's the reason for the five-year operating plan that they produced where some of this preliminary work will be done.

So from our perspective this is the way to go about it. At some point when they have sufficient information to make a decision to go forward they will have to put forward an application which will definitely trigger an environmental assessment under the *Canadian Environmental Assessment Act*. So I can confirm what Dr. Kupferschmidt has said.

In terms of handling of EAs single project versus bundling, I'm going to ask Dr. Thompson to speak to that.

DR. THOMPSON: Patsy Thompson for the record.

In terms of the application of the Canadian *Environmental Assessment Act*, as was mentioned, the application and the requirement for licensing action is the trigger. The *Canadian Environmental Assessment Act* does not apply to planned strategies or policies but applies to projects, physical works and undertakings.

At the time when we would receive an application or a letter of intent the process we follow is to review a project description provided by the proponent and look at the links between the project and other areas on the site that would have a relationship in terms of essentially infrastructures that are required to support the project or links in terms of potential interactions with the environment, and it’s at that time that we scope the project and the assessment.

We would do that with an application for the five-year or parts of the five-year implementation plan, and it’s likely that projects would be linked because they are dependent and interrelated, but that assessment would be done when we get an application.

In any case, the assessments would cover the cumulative effects portion of an environmental assessment that looks at impacts of projects and in relation with other projects that are either underway or planned, and this would allow decisions to be made by

considering a complete set of information.

MEMBER BARNES: If I could keep going on waste management and refer to the actual licence -- and this would be page 24 of 36, section 18, which is broken into three parts there, section 18.1, 18.2 and 18.3, which requires the licencee to produce by October 31, 2007 a waste management framework document and it goes on in 18.2 and 18.3, talking that this document will refer to, for example, the last line on page 24:

> "...for a plant to dispose of, store or treat all wastes identified in conditions 18.1, 18.2."

But this refers only to the waste generated under this current licence.

To staff, could you explain how that document dealing with waste within this current licence also integrates, in a sense, with the issues with waste from earlier licence periods? -- if I'm reading this correctly, which I may not.

MR. HOWDEN: Barclay Howden speaking.

I'm going to give an introduction and then ask Don Howard to add a bit more information.

You are correct that the waste management going forward, the plan required is under 18.1, 18.2 and 18.3 of the licence. For waste that has been produced and

has been managed now, the waste facilities are governed under a facility authorization which is basically operating limits and conditions that governs how those facilities should be operated. Those are captured in one of the appendices of the licence. So those are already in place and governed.

As well, in terms of going onto site remediation and implementation of the Comprehensive Preliminary Decommissioning Plan, we do have another licence condition that focuses on waste characterization of the waste that exists that may not be fully understood due to legacy management of the waste and loss of records. So between those three things, in our opinion, there is a good regulatory framework governing the management of the waste at this particular site.

Don Howard is going to add a bit more to that.

MR. HOWARD: Don Howard, Waste and Decommissioning Division.

I just wanted to add that the intent of this particular section of the licence was to look at the radioactive and hazardous wastes that are currently produced over the next licensing period at the Chalk River site and also the waste that is received from outside clients. What we wanted was a better handle on what the

characteristics of those wastes are, to ensure that they're properly stored in waste management areas, and also to ensure that they're not producing or accepting waste for which they have no approved treatment or storage or disposal facilities capable of handling that type of material. So that was the intent of this section 18.

MEMBER BARNES: And I understand that you're confident that you can link the past with the present licence interval. I mean, you've said before that AECL does not have a good plan certainly for storing of solid waste. That was the issue I raised just earlier this morning, and now you're wanting this licence to have a condition that will address the waste being dealt with in this current licence period. But, clearly, there are some problems with the past one

Do you think you have a good handle on integrating the past problems with the waste being generated over this -– or received through this next licence period?

MR. LOJK: Bob Lojk, for the record.

The two are not quite linked. Well, we're trying to make sure is that whatever comes on the site, there's a plan to deal with it and that material is not accepted on the site for which there is no plan.

There is a plan in place to deal with the

past as Mr. Howden pointed out and there's a plan to deal with the future of that waste. But we want to make sure that they don't bring in material that in fact there is no plan or storage capacity for, which would create added problems to a site which is now operating at the limit and for which there may or may not be storage capacity and temporary facilities would have to be built.

MEMBER BARNES: Okay, I'll leave it. Maybe I could just ask one more question in this round and pass on to my colleagues.

Just to AECL, you've provided some information on the proposed Environmental Stewardship Council -– follows after your main report, follows page 37 and specifically A1 to A6. I had two questions which I didn't really see in the definition of all the background documents on the council.

First was, to whom does the council report?

MR. McGEE: Brian McGee, for the record.

I wouldn't really say that the counsel reports to anybody per se, that's -– and the terms of reference and the objectives are still in draft because we see that as one of the first activities of the council, really, to sit down and develop them. And, you know, we gave them a starting point rather than an end point. We believe that for the council to function effectively it's

important that they have some dialogue on the terms of reference and the objectives and so on.

In terms of reporting, they don't really report, there's not a reporting mechanism per se. AECL will provide information to the council at the council's request, and the council will provide recommendations to me, essentially based on their observations, based on their input. So it's really a mechanism for us to provide information to them -- at least that's our thinking going in -– provide information to them and get the influence of their thinking in our decision making.

MEMBER BARNES: So if I were to look at the AECL organizational chart, would you put the Environmental Stewardship Council on your org chart?

MR. McGEE: Brian McGee, for the record.

No, I would not. They're intended to be independent. You know, we'll fund the facilitation of it, we'll be participants in it; we'll get it up and going. But they -– I think there's a need for them to be independent, and I don't want to speak for interest groups in the communities. I'm not sure they'd be comfortable showing up on my org chart, frankly.

MEMBER BARNES: If, for example, I happened to be a member of that council and I see the council is going to elect its own chair; is that right?

MR. McGEE: Brian McGee, for the record.

That's the intent, yes.

MEMBER BARNES: And if I then turn out to be the chair and the council has had discussions, wanted to make some recommendations, how would I communicate that? Is it to you, or would I feel that I therefore had a right to, in a sense, report or communicate these decisions or recommendations of the council to anyone at AECL, including the president?

MR. McGEE: Brian McGee, for the record.

The intent -– I'll be a participant on the council as well; so I'll be in attendance.

To specifically answer that question, the intent would be that the council would make a recommendation to me as the senior management person on site on whatever their concern was. I don't want to preempt too much. I don't want my answer to sound too prescriptive because, to a large extent, we're counting on the council itself to, you know, when it's up and running to function in a way that gives us recommendations even on how that would -- how that aspect of it would work.

But you know to provide a comparison, there are community advisory councils typically in the jurisdictions of other licencees and we're using a model like that. And when I say essentially a consultative

framework, it's an advisory framework and in my experience it works quite well. I've been on them personally with other licencees and my experience is quite positive and I believe -- again, I don't want to speak for others -- the experience of both the communities and the interest groups I believe is quite positive as well.

MEMBER BARNES: And second question: It notes that minutes will be taken but it doesn't say whether the minutes will be made public, for example, on your website, local libraries, CNSC.

MR. McGEE: Brian McGee, for the record.

I'll ask Donna Roach to answer the plans in that area.

MS. ROACH: Good morning. Donna Roach, for the record; Manager of Site Community Affairs.

The answer is yes. In all of those cases, they will be publicly available as well as provided to staff and made available in other locations.

MEMBER BARNES: Does staff have any comments on the Environmental Stewardship Council and, specifically how it is so called reporting or communicating back into AECL?

MR. HOWDEN: Barclay Howden speaking.

We have nothing specific because we see it as a part of the communications tool that AECL wishes to

use. From our experience we've seen these used in other communities and if they're set up properly and funded properly they can be a good way to get consultation with the community.

Also, the fact that they're going to post the minutes and make them available to us and other people, that's very positive because it allows us to get a measure of how the public communication program is going, like we look at different measures within the communities and this is one measure we can look at to see how well this particular group is working.

THE CHAIRPERSON: Okay. Thank you, Dr. Barnes.

Dr. Dosman, do you want to proceed?

MEMBER DOSMAN: Thank you, Mr. Chair.

I have several questions. The first relates to quality assurance and I'd like to address initially a question to AECL.

I note that both in quality assurance and emergency preparedness that you're -- if you like, the rating was -– and that is environmental protection -– the ratings were a "C" for implementation and performance assurance is "C".

I'm just wondering if Mr. McGee or others would be prepared to comment on your plans to improve in

that category.

THE CHAIRPERSON: I think at the back they are having problems with hearing. I wonder if we could just get the audio up a little bit. I found that myself this morning. You know, I do have a cold, but it's a little difficult so maybe the audio could be checked.

MEMBER DOSMAN: On the issue of performance assurance and radiation protection; on performance insurance both the program and the implementation were rated as "C" in category and environmental protection a "C", although both of those were rated as an upward trend. And I would like to ask AECL if you would be willing to comment specifically on your plans to bring those into alignment.

MR. McGEE: Brian McGee for, the record.

I'd like to address quality assurance first, performance assurance, because so much of that is essential to the improvements that we're going to make in other areas. It's really a building block of our performance.

And so, yes, there are improvements being made and there are other improvements planned to continue the growth and improvement of the program.

At Day One I mentioned the development of the performance improvement and nuclear oversight

organization or the so-called PEANO organization. PEANO consists of performance audits and assessments, operating experience and corrective action, safety culture and human performance and quality assurance and quality control. So those are really the four elements of the PINO organization.

What we're doing, and we've made significant progress since Day One in the development of that organization -- and it's already up and running. We're doing performance audits now and specifically in radiation protection even though it's rated as a "B", as part of the PEANO approach you keep on looking for ways to improve the performance well beyond where you are today and beyond where you're going to be tomorrow.

And so we're doing performance audits in that area. Not just looking at quality assurance, but looking at all aspects of performance and looking for how we can elevate, not just to the level of compliance, but elevate performance to industry best standards, industry best practices. And ultimately, you know, the journey will take us to a point where we expect to be part of helping to define those industry best practices.

So the PEANO organization is really central to the performance assurance improvements that we have underway. Quality assurance -- so I've talked about the

performance audits and assessments portion of it which is really a strong tool for management oversight and elevating awareness of the problems that we have.

I talked earlier about the operating experience and corrective action portion when we talked about reportable events. Getting that reporting structure, getting more open dialogue, more open reporting, creating a culture where people are comfortable in identifying low-level problems and problems at all levels openly is another aspect of that, and that relates to performance assurance as well, which is why it's in the PEANO organization.

And then quality assurance and quality control; specifically quality assurance, we're adjusting how we're going to undertake our quality assurance program, not changing the program itself, but our implementation of the program which is where the staff concern and, frankly, my concern is in terms of its implementation. We're going to have our quality assurance representatives co-located so they're not distributed. We're going to use an integrated site approach rather than approach based on organization within the site, and we're going to increase our specialization so that we build stronger skills within our quality representatives and give them areas of specialization that they can become

stronger, give us more depth and knowledge in those areas.

And so that addresses the performance assurance portion of it, which we made a comment at Day One on radiation protection, and even though it is a B-rated program, that we wanted to use it as an opportunity to go out and find how we could go to the next level with it. That's -- the PEANO Organization will help us with that.

The environmental program, the implementation of the environmental program, we are making progress. There are other plans that we have in place both from a sampling and remediation perspective, as well as a staff education perspective, greater oversight. At our Operational Safety Oversight Committee, environmental protection is one of the central areas that we look at. We challenge ourselves. We understand where performance is not tracking to expected levels and we develop corrective action plans to go out and address that.

So those are all elements of the performance assurance, the management oversight that will address those program areas.

MEMBER DOSMAN: Mr. Chair, I wonder if I might ask Mr. McGee if you would be willing to predict when during the course of the proposed licence that those items might be brought up to the standard?

MR. McGEE: Brian McGee for the record.

I'll try not to judge CNSC staff's reaction to our performance too much here. Let me put it this way. I won't be satisfied unless we're a B-rated program within two years in those areas. That's my expectation. That would be the longest I would be comfortable with us not being a "B" and simply because that's the building block to where we really want to go, you know, "A" program and exceeding CNSC expectations and really being part of setting industry standards is really where we want to go. So my personal goals are within two years.

MEMBER DOSMAN: Mr. Chair, if I might ask CNSC staff on the issue of performance assurance, if CNSC staff shares the view that AECL will be able to bring those items into line?

MR. HOWDEN: Barclay Howden speaking.

I think from our perspective there's two things I would like to discuss. One is we have noted improvement and we have acknowledged it, and that's the reason we've given improving trends to performance assurance.

At the same time, we've noted that there's still more work to be done and it's very important that AECL keeps working on those particular areas.

What we have done is made sure that when we

do find deficiencies, that their significance is identified such that interim measures can be put in place.

As well, we require the detailed corrective plans which are risk based and we require enhanced regulatory oversight from ourselves.

And what we're seeing is this is occurring, which I think is a very positive trend where previously it was felt that we were spinning our wheels to a certain extent. A lot of it is coming down to communication at the senior management levels and, as well, at the technical levels of what our expectations are such that AECL understands that, and when they do, then they can effectively deal with them. What we're seeing is I think this was coined the term "convergence of issues". We're seeing that more and more, not to say that there aren't outstanding issues but, again, I think we're finding processes better to reach convergence of issues so that AECL can go forward.

I would not predict whether two years is the timeframe that we'll be satisfied. It's really up to AECL and it's really in Mr. McGee's hands to make that happen, but certainly in the past six months he is making it happen. So I would say our confidence is much higher than it has been. So that's very positive.

The other thing I would like to just

comment is on risk, Dr. Dosman. Just to put it in perspective for people when you see “C” ratings, this means that the program is below requirements and that there’s a moderate risk that the program could fail, but the program is one of many programs within the organization that supports the whole idea of defence in depth. Defence in depth being barriers which are, some of them physical like shielding and piping. Some of them are systems like control systems and shut-down systems and others are administrative type systems, and that’s where you get to the programs: quality assurance; training; operational experience. And the combination of those three really provide you with defence in depth.

So when we do see an erosion in a program such as quality assurance, we don’t necessarily see the safety margins being eroded away because there’s lots of other barriers in place.

However, when you see a deficiency, there has to be a sense of urgency to fix that deficiency to return all the barriers to their full effectiveness. I would say we’re seeing that very positively on the performance assurance. There’s still more work to be done, so I’m not going to make any predictions, but from our perspective, we’ll make sure the regulatory oversight is there to make sure that the facility is being operated

safely.

MEMBER DOSMAN: I wonder if I might ask, Mr. Howden or CNSC staff, how do you see the various documentation and so on that's required to maintain the performance assurance coming into place?

MR. HOWDEN: That's a question that I would like to refer to Mr. Paul Wong who is our quality management specialist, who is the person on the ground really overseeing the improvements to this program from a regulatory perspective.

MR. WONG: For the record, my name is Paul Wong, Quality Management Specialist.

As far as documentation in terms of documenting the program, it is in pretty good shape. AECL's documentation has always been pretty extensive. So I think our findings for a "C" rating is not related to the poor documentation.

MEMBER DOSMAN: Thank you.

Mr. Chair, I would like to go on, if I may, to just ask some questions on the environmental protection end and specifically relating to tritium, and I note on Table C6 of staff documentation that the tritium levels, albeit at relatively low levels, if you look at the NRU building vents, the tritium levels seem to be gradually increasing over the years from the mid 1990s, Level 1.4,

1.7 to, in 2005, 3.31. And indeed if you refer to Table C1, the power production in 2005 is actually somewhat lower than in previous years, and I'm just wondering if I might ask AECL if you're having any more difficulty controlling releases than previously, although the levels being relatively low, whether this trend is in any way worrisome for you and what it means?

MR. McGEE: Brian McGee for the record. I'll direct that question to Bill Shorter.

MR. SHORTER: For the record, Bill Shorter, General Manager of Reactor Operations.

The trend you see in the tables is a direct reflection of the rising concentration in the heavy water moderator of the NRU reactor.

In terms of concerns, it's definitely an area of concern. We're looking specifically at activities we can undertake to reduce the tritium level in the moderator, the cost benefit of a feed and bleed type scenario. That initiative is currently under investigation.

As far as whether the releases are increasing, I think it's merely reflective that the concentration of the tritium in the moderator has increased.

MEMBER DOSMAN: I wonder if we might have

CNSC staff comment on this issue?

THE CHAIRPERSON: You're referring to the ones on page 21, Tables C3, C4 and C5?

MR. CRAWFORD: We would agree with the comments made by AECL, and I think in terms of our interest, if you look at Table C7, it shows doses to maintenance personnel and operations personnel. The maintenance personnel doses are similar to -- although they have gone up in the last three or four years, they are similar to the trend over the last 10 years in the region of 0.6 to 0.7 milliSieverts per year.

When you look at the operational personnel, the doses are going up and there is an issue here that we need to keep a close eye on, but the doses are still well below doses that would cause us any concern in terms of exceeding regulatory requirements.

MEMBER DOSMAN: I wonder if I might go on to Figure C2 in the CNSC document, and this documents effective whole-body doses to NRU maintenance personnel, and as it shows, 0 to 5 persons that are receiving in the 15 to 20 range in terms of milliSieverts, and I wanted to ask, are those all the same people who are receiving these higher doses or would those higher doses be sped throughout a larger number of persons? Are the same small number of persons consistently having higher doses every

year? I might ask CNSC staff since it's your document.

MR. HOWDEN: Barclay Howden speaking.

I will have to ask Caroline Purvis, our radiation protection specialist to speak to that. I'm not sure if we know if it's to the same people. AECL may be able to provide that, but I'll ask Caroline Purvis to comment first.

MS. PURVIS: For the record, Caroline Purvis, Radiation Safety Specialist.

I believe that AECL probably is in a better position to answer that question with respect to whether the same people are receiving the doses year after year.

MEMBER DOSMAN: May I hear from AECL on this issue?

MR. McGEE: Brian McGee for the record.

I will direct that question to Bill Shorter.

MR. SHORTER: Bill Shorter for the record.

With respect to Figure C2, because NRU has an essentially dedicated maintenance crew, the answer to your question would be that the majority of those persons would be the same people from year to year. Perhaps up to, I think, a relative number of 75 per cent of those persons would probably be attached to the facility from year to year.

MEMBER DOSMAN: Is AECL confident that those small number of workers over time are not accumulating excessive doses?

MR. McGEE: Brian McGee for the record.

Yes, we're confident in that but, again, one of the reasons that we initiated a review of our radiation protection program is to look for ways that we can improve our practices in dose control and contamination control.

And so we're expecting -- even though we're confident the current state is acceptable, we're looking for ways to improve the situation and reduce worker doses.

MEMBER DOSMAN: Mr. Chair, on the issue of tritium, I'm just wondering -- I'd like to refer to Table 3.4 in CNSC document on page 8 of CMD 06-H9B. I would just like to ask about the concentrations of tritium in the vegetables, in the tomatoes and beans in Pembroke particularly versus others and that's probably an outlier but I wonder if CNSC staff would be willing to comment on the numbers for bean and carrot at Pembroke?

MR. CRAWFORD: For the record, Gerald Crawford.

Those two particular higher tritium concentrations for beans and carrots in the Pembroke area, we say in the text that these we believe are likely due to

tritium from non-AECL sources.

MEMBER DOSMAN: So I take it that you are confident that this doesn't represent necessarily contamination from AECL facilities?

MR. CRAWFORD: For the record, Gerald Crawford.

Yes, we are very confident that this doesn't represent contamination from AECL sources.

MEMBER DOSMAN: Where would the tritium come from, do you have any idea?

THE CHAIRPERSON: Might be for another licensing day, perhaps ---

THE CHAIRPERSON: --- which I think will be before us.

MR. CRAWFORD: It's likely it comes from another licensee in Pembroke, probably SRB.

MEMBER DOSMAN: Mr. Chair, thank you, and if that question was out of order I apologize.

I would just like to ask AECL on their licence condition 14.2.1, the criticality issue, Mr. McGee, you indicated what I take it would be a concern that AECL might have difficulty meeting this condition and I'm just wondering if you would like to make any further comment on that issue?

MR. McGEE: Brian McGee, for the record.

I'll ask Jean-Pierre Létourneau to respond to the full question. I think our concern is around 14.2 Part 2, but I'll ask Jean-Pierre Létourneau to respond to your question.

MR. LÉTOURNEAU: Jean-Pierre Létourneau, Director of Licensing SPOC. Good morning, Commissioners.

If you, as Brian indicated, if you turn to page 19 of the CNSC staff proposed licence for Chalk River and if you turn your attention to subsection 2 of condition 14.2 you'll see that the licence condition contains some details that we think are too specific and which do not provide us with the flexibility that we would require to implement our Criticality Safety Program.

An example is if you look at the paragraph that starts with:

> "If calculational methods are not applied then the margin of subcriticality of 20 per cent of the critical mass would have to be used."

So we feel this is quite limiting for us because some of our criticality safety practices use other parameters than critical mass; for instance, volume, linear density, concentration of solutions. So we feel that that level of specific detail should be in our Criticality Safety Program and we are going to work with

CNSC staff to discuss that further.

I guess I'm pleased to say that I will be driving the development of that Criticality Safety Program in my new function between now and December 2006.

MEMBER DOSMAN: Mr. Chair, I wonder if I might have CNSC staff comment on this issue.

MR. HOWDEN: Barclay Howden speaking.

Yes, I have two comments; one, just to remind people that AECL does have a Criticality Safety Program in place. The second is the purpose of these licence conditions is recognizing international standards for managing your program are in place. And so what we've done here is we have basically quoted international standards which are being applied against other licensees in Canada.

We understand AECL's concern with regard to this portion of the licence condition and from our perspective at this point we think it's very important to have all these standards in place as they revamp their program, these are the targets they have to meet.

Nonetheless, we have acknowledged their concern and recognize that if there are practical difficulties and there is alternative ways to meet the condition, we would be prepared to seek an amendment from the Commission on this particular licence condition. But

at this moment in time as we go forward to apply these internationally accepted standards we are maintaining our position that we are recommending that the Commission accept all of these conditions, recognizing there will be a lot of work to be done over the next six months that could result in us coming back for an amendment. But at this point we are going with what we believe is standard and should be applied at a facility such as this.

MEMBER DOSMAN: Thank you.

THE CHAIRPERSON: I believe AECL would agree with that type of process?

MR. McGEE: Brian McGee, for the record.

Yes, we are in agreement with that approach.

THE CHAIRPERSON: Fine. I have one question before I go to Dr. McDill with regard to one of the questions of Dr. Dosman and that is with the high levels in Pembroke.

How -- even though it doesn’t pertain to today’s hearing -- my question would be to CNSC staff -- how do we propose to deal with that since it is very high levels and so on and it’s now before us? I know it’s not today’s hearing, but how would you propose to come back to us on that information?

DR. THOMPSON: Patsy Thompson, for the

record.

As you're aware, the licensee is making progress in terms of looking at measures to reduce the amount of tritium being released to the environment. The licence renewal for that particular facility is coming up and staff will be providing an assessment to the Commission in terms of progress that is being made.

We should say, however, that the numbers are high relative to natural background and relative to what is being seen around other sampling points that Chalk River, AECL is measuring but that those concentrations do not represent a health risk to people consuming those vegetables. The doses to members of the public from consumption of those vegetables, is well below the public dose limit.

THE CHAIRPERSON: Yes, I don't want to get into a debate of answering questions for someone that is not here but I just wondered, you will be coming back when that other licensee does come before us with relevant up-to-date information; is that correct?

DR. THOMPSON: Patsy Thompson, for the record. That is correct and the Day One Hearing for the licence renewal is scheduled for August.

THE CHAIRPERSON: Thank you.

Dr. McDill, I'm sorry it took so long, but

you are next.

MEMBER McDILL: Not at all. Thank you very much.

I'm going to follow up one of Dr. Dosman's questions first with respect to the Quality Assurance Program on page 4 of H9-B.

I'd like to look at three specific examples that are referred to on page 28, just as a point of reference so that AECL can answer some questions. The three I picked are on page 28; difficulty with welder's qualifications; work proceeding beyond the mandatory inspection hold point and difficulty with special processes such as concrete work and the results not being within specification.

My questions are twofold: Will AECL explain how they're changing their processes so that these kinds of things will not be an issue in the next 63 months?

MR. McGEE: Brian McGee, for the record.

The processes themselves, and I believe CNSC staff mentioned that the weaknesses are not in the program specification. Its weakness is in the implementation of the program.

So recognizing that these particular issues are a legacy to the extent that they were a part of a

project construction from many years ago, more than five years ago, we are using these as opportunities for learning. We're immensely dissatisfied with this result. It's not the type of performance that we consider acceptable within the organization and so we're using this particular experience as a key learning opportunity in terms of how we implement the program both from a design specification perspective, a construction and procurement adequacy perspective and commissioning.

And so we're undertaking corrective actions in response to this audit that will give us further assurance that we will have proper management and organizational controls in place to assure ourselves and the Commission that these types of events aren't ongoing. Included in that is strengthening the design authority presence and ensuring changed control process within the organization onsite.

MEMBER McDILL: Could I ask for staff's comments, please?

MR. HOWDEN: I am going to ask Paul Wong to respond.

MR. WONG: For the record, my name is Paul Wong, Quality Management Specialist.

Yes, I think AECL when they carried out this particular project in the NRU did not fully implement

or follow the AECL corporate QA program on construction at that time. We have since been briefed by AECL and we have received the corporate QA program on this particular construction for AECL in general and their program claims compliance with the CSA standards.

In terms of going forward and preventing a repeat of similar deficiencies, as long as they follow the construction program that is in compliance with CSA standards, CNSC staff will have better confidence that these kinds of deficiencies will not repeat itself.

Staff will be paying more particular attention on future projects at AECL in these areas and watching out for similar repeats.

MEMBER McDILL: Thank you.

My next question then, I guess, is a follow up of Day One questions that I asked. It's in AECL's document, Item 3.6.1 on page 17 with respect to the material condition. We discussed this last day.

Is staff now more comfortable with AECL's statement that the reactor vessel material properties are adequate?

MR. HOWDEN: Barclay Howden, for the record.

With this particular issue, no, we're not yet satisfied. There has been progress on the Periodic

Inspection Program but issues remain. AECL has submitted information on these particular ones. We have had comments on some things that we found have been improved but there are still other areas requiring further work.

Where we stand from a regulatory standpoint because of that is we have our licensing strategy which is outlined; the expectations; the timing, et cetera, and we are continuing to implement that particular strategy.

As of today, we are of the view that NRU is being operated safely. Nonetheless, these identified issues continue to exist and that's the reason why we have the licensing strategy, because some of these things need to be taken care of in the shorter term and some in the longer term.

We expect more work on this on a continuous basis and what we plan to do is, if for some reason AECL is unable to convince us on some of these issues, we would then use our licensing strategy to go into an enforcement-type strategy where we would use enforcement to achieve the safety that we require. But at this point there has been improvement, but we're not fully there.

MEMBER McDILL: I guess I had better ask AECL to comment on that and perhaps describe also how you plan to resolve these difficulties between the two parties.

MR. McGEE: Brian McGee for the record.

I think part of the answer to that in terms of how we resolve it is the ongoing dialogue and communication that Mr. Howden referred to earlier on in the discussion and we have had ongoing discussions even recently about this issue. There are some -- you know, the issues around the Periodic Inspection Program and as part of the Pressure Boundary Program and overpressure protection, those are issues that -- I can assure the Commission of one thing: that we won't put CNSC staff in a situation where they're required to enforce anything.

Primarily, I think the concern is or the central concern at least is around the high-pressure loops. Before we make any decision on the high pressure loops, as far as return to service, we'll convince ourselves that we've done everything that's required and part of that will be discussions with CNSC staff and get their perspective and their influence and input into what we're doing. And we'll -- before we approach staff on the loops, we'll convince ourselves that it's safe to proceed, and in doing so, hopefully we'll be able to convince them that it's safe to proceed, but we won't compromise performance and we won't compromise the requirements of the Pressure Boundary Program.

There are some differences of view

regarding some destructive testing, for example, on what -- we have done some destructive testing. The question is scope and so there's opportunities for further dialogue and to converge our views on what constitutes an acceptable scope of destructive testing.

MEMBER McDILL: Could I ask, roughly, how many samples have been destructively tested at this point?

MR. McGEE: Brian McGee for the record.

I'll direct that question to John Arnold.

MR. ARNOLD: John Arnold for the record, NRU Operations Manager.

In particular over the years we've done quite a bit of destructive analysis on the NRU facility both due to situations that have called for, through our plant life management program, our condition assessment reports that we've put out and also to deal with past events that have occurred.

The exact number is not one that I have at hand but it's extensive and as part of the Plant Life Management Program, for instance, we've done an analysis of our bottom header condition, we've done an analysis of some piping systems and we've also done an analysis of our cabling systems.

MEMBER McDILL: Is staff asking for more destructive testing or is it satisfied with the amount

that’s been done thus far and the concern over the analysis of the results of that testing?

MR. CRAWFORD: For the record, Gerald Crawford.

The Inspection Program is that -- has been presented for the NRU Reactor by AECL. The latest one is an improvement on the previous proposal but our CNSC specialists still believe that it isn’t there yet and their belief for the moment is there is a requirement to do some more destructive testing.

MEMBER McDILL: Thank you.

I’m going to take a -- I’d like to ask one question. Is the presence of the site office -- and I’m asking this question because it’s brought up later by an intervenor and this is perhaps a good time to ask it -- is the presence of the site office helping this resolution of this issue?

MR. HOWDEN: Barclay Howden.

From our perspective, not at this moment because this is -- much of the discussion is between specialists in Ottawa and AECL specialists. Nonetheless, the presence of the site office will contribute to the compliance oversight as we go forward and, in particular with NRU being a major facility, we expect to have day-to-day contact in terms of rounds that you would expect to

see in a power facility. So that's one thing that that's going to give to us.

May I make just another comment on the regulatory approach? Just to back up a little bit.

MEMBER McDILL: Please do.

MR. HOWDEN: Thank you.

I just want to tie in a couple of things that Mr. McGee said and this is on the basis of discussions that we've had as we go forward.

From the broad site perspective, we're looking at the site issues. We've seen tremendous improvement and that's why you're seeing less programs with C's and trends upwards, and this is very positive. But nonetheless, even though you have that, you do have program issues and you have facility issues and those need plans to be resolved.

With regard to NRU, we have our licensing strategy and part of the licensing strategy is a requirement for plans, it's a requirement for programs and this is guiding us as we go forward.

I'd just like to highlight what we really see is important for NRU. The Periodic Inspection Program, overpressure protection and safety margins are three of the things that have been mentioned. These are very, very important from our perspective and we're going

to take a hard line on them.

As Mr. McGee said, he spoke about the loops. The loops are currently out of service and if you look at a lot of these issues the loops are common to many of them. So if we go forward and some -- and there's a slowness on some of this thing, I would expect there would be activities related to the loops or no activities related to the loops, like putting them back into service.

And my understanding from Mr. McGee, which I think is very critical, is that his intention is to take the decision before we have to take enforcement action and this is the type of thing that we are looking for from a licensee. As opposed to having to use the enforcement, we want them to see the issues, understand them and take them such that we don't have to take enforcement action. But we do have the enforcement action in our toolbox.

I'd also like to point out that the licensing strategy is referenced in one of the licence conditions. So this is basically a very legal document now. One of the things we plan to do is probably within the next six to nine months, possibly a year, is do an amendment on that licensing strategy as more information comes forward and to do that we need an amendment to the licence. So actually it would be an opportunity to come back to the Commission to get that amendment but also to

update you on that if it's necessary to do that.

So I'm not sure if the Commission knew that that might happen but that's one thing that we would probably do.

So that just in a nutshell is our concerns with NRU, our strategy towards it and our expectations that AECL takes the necessary actions before we do. And they have done that. If you look at the MAPLE Project which is currently -- has been shut down and is now coming out of GSS, AECL took the action that we required on the MAPLEs before we were required to actually take legal enforcement action. So that was a good sign on the MAPLEs and that's our expectation with NRU as well.

Thank you.

MEMBER McDILL: Thank you.

I guess I'll ask AECL to comment first on the presence of the site office and then if there are any comments related to what Mr. Howden just said.

MR. McGEE: I would agree -- Brian McGee for the record. I would agree with Mr. Howden in terms of -- on all regards in terms of the presence of the site office. My experience in the power reactor sector is that having CNSC staff on site as a visible presence as part of your day-to-day operations is a positive. It aids communication and it aids awareness, and so I see it as an

overall positive.

They're clearly independent. You know, they -- the facilities are isolated from our facilities to the extent that it's controlled access and so on, and so there's a level of independence but they are -- it is a positive in terms of -- I see it as one of the tools in helping me, frankly, with the performance improvements I'm striving for.

Just to reinforce Mr. Howden's comments on -- and I've already said that, you know, I won't put staff in a situation, in a position where they have to take enforcement action because I will take those decisions first. And that even goes beyond anything at that level and I'd like to give you an example.

Earlier this year, since Day One Hearing, frankly, NRU was shut down for a planned outage and we took a conservative decision to hold the start-up of the reactor back for an additional 10 days while we followed up on some internal concerns that we had regarding the state of the loops in terms of their low-pressure cooling.

So we did that recognizing that it wasn't anything close to an enforcement type of issue. It was just a conservative decision that we made that has significant impact, 10 days of loss production, that we made that decision conservatively to satisfy ourselves

that we were in the right position from an operational perspective. And so that type of conservative decision-making and management action is really central to the type of improvements that we're driving for.

MEMBER McDILL: Thank you. That's it for Round One.

THE CHAIRPERSON: Thank you.

I just have one comment or one question and then we will take a 10-minute break, but -- and then when we come back we'll go to Round Two, but further to Dr. McDill's first question with regard to page 27 and 28 of Appendix E, a lot of those concerns and deficiencies, procurement deficiencies, construction deficiencies specifically, seem to be just commonsense or no-brainers and I'm wondering is there a problem -- and this question is to AECL -- is there a problem with the culture of staff and their thinking as to procedures that should be followed that sometimes are not, just because of not necessarily safety culture but culture of just doing things the right way? How are you overcoming that to drill that into -- not drill it into but to make staff think that those are just commonsense issues? I'd like you to comment on that.

MR. McGEE: Brian McGee for the record.

To some extent when you see them on a page

like this they appear to be commonsense but the processes that get you to that point require some amount of rigour and some amount of management oversight.

I've been on the site now for over seven months and I've had a lot of contact with staff. I see no evidence whatsoever that the staff on that site have -- that there's anything wrong with the culture from the point of view of not caring about this sort of thing.

I don't want to sound too philosophical here but I, for a long time in the roles that I've been in, I believe that I get the culture I want. If the organization culture -- organization's culture isn't to my liking I only need to look one place and that's in the mirror.

And so when I look at the staff and the capability of the people on that site I have absolute confidence that if I provide the right type of leadership we'll get the right type of performance. I see no cultural aspect on that site other than a group of people who are among probably the most talented in the industry and who are among the most capable, and with the right leadership I believe that we'll be able to achieve what we're promising.

THE CHAIRPERSON: Thank you.

Does CNSC want to comment any further? I

don’t want to belabour it, but you went to some extent of identifying a lot of things and I’m just wondering, do you feel that this is working its way through and that with the leadership now that’s at AECL that this won’t be a continuing process?

MR. HOWDEN: Barclay Howden speaking.

From our perspective, yes. As you’ll notice between day one and day two we’ve continued to keep the trend arrow in a positive fashion because we’ve introduced the audit findings into our assessment, because at the time of day one we had done the audit but we hadn’t rolled the findings into the overall assessment. So from our perspective we still see the positive trend going forward that the QA is -- as we said, it’s really not necessarily a program issue; it’s an implementation issue which needs leadership to make that happen and we see that very positive right now.

THE CHAIRPERSON: Thank you. With that, it’s 10:32. We’ll take a 10-minute break and we’ll be back at 10:42 to proceed with Round Two.

Thank you.

--- Upon recessing at 10:33 a.m.

--- Upon resuming at 10:47 a.m.

THE CHAIRPERSON: Would everyone please take their seats so we can proceed?

Very well. We will proceed, continue the hearing and proceed to Round Two of questioning and we'll start again with Dr. Barnes.

MEMBER BARNES: Just a comment, Mr. Chair, to maybe belabour the point but I, too, was somewhat astonished by the information in Appendix E that we've just been discussing, particularly the NRU safety upgrades.

When you go through the bullets here, so many obvious things were not done within just a relatively short period ago, and yet we heard at the outcome of today's meeting AECL proclaiming that they wanted to be absolutely world class, et cetera, et cetera. I mean, that's quite a dichotomy between what we read in Appendix E here in detail with the upgrade to the NRU reactor and the standards that they are proclaiming.

So I guess we can only hope that these sorts of things do not reoccur, but given the status of the NRU and the requirement to have those safety upgrades, it really is disturbing, I think, to see the information contained in these many, many bullets where things which should really be pretty obvious to any kind of construction effort simply are not being taken care of.

I'm not sure, Mr. McGee, that you can claim that all of this will be done by looking in the mirror. I

think a lot of this must be in the procedures all through and the management oversight at many, many different levels, and I think it's very difficult for someone in your position to be able to control a lot -- personally to control a lot of this sort of activity at these levels. I wish you well, but I think nonetheless I'll just make that personal comment on that.

Maybe I could just go through a few remaining points that I have. To AECL, in your document on page 27 -- and this relates to the comprehensive preliminary decommissioning plan and cost estimates. It's on page 27, section 4.7. You have three bullets.

To AECL,

> "AECL is committed to update the CPDP on at least a five-year basis. The update would involve consulting and communicating with the public; provide ongoing opportunities to address concerns of community members..."

I would say as a Commission member I would refer and perhaps ask that this update be done well before the next licence hearing so that the results of this can be brought to the licence hearing as opposed to, let's say, close to five years from now, which would be a process where we wouldn't hear the outcome at the next

licence hearing if the term proposed is accepted. That's a comment. I assume there would be no problem in doing that.

MR. McGEE: Brian McGee for the record.

I see no problem in doing that.

MEMBER BARNES: On page 31 and this is brought up certainly by one of the intervenors and, again, I was somewhat surprised as this relates to the drinking water and the water for washing and showering. This is in 4.11.1, 4.11.3 on page 31 of AECL.

To what extent is this a significant health hazard for the quality of water in shower situations where clearly most people do ingest a certain amount of water taking a shower, et cetera? Is it not possible to pipe water in from the Ottawa River?

MR. McGEE: Brian McGee for the record.

I'll make some initial comments and then I'll direct the question to Steve Laughten.

To answer directly the question you just asked, we do pipe water in from the Ottawa River right now. We do have a water treatment plant. It's just not up to current standards in terms of its ability to remove particulate. So probably without getting into the technical details of water treatment systems, it has a shortcoming in its present design. It doesn't meet

current standards. So that's why we stopped treating it as potable water.

What we do to provide people with drinking water is provide bottled water. So if you're on the site, the facilities all have bottled water with water coolers. The old drinking water fountains have been capped. They're out of service. And we also provide a drinking water filtration system for the cafeteria where there is higher volume of water used. We also do regular sampling of the water for showers to assure ourselves that it's safe for human contact, and I'll let Steve Laughten elaborate on that.

MR. LAUGHTEN: For the record, my name is Steve Laughten, General Manager of Nuclear Operations.

Regarding the showers, we do monitor the showers for elements that could be potentially hazardous. We follow Ontario Regulation 170.03, drinking water regulations. We recognize that the showers are not deemed potable. That's why we have signs in place to assure ourselves that employees don't consume the water.

We do have an oversight from the Renfrew County and District Health Unit that is on site approximately four times a year. They monitor our performance. They monitor our procedures and our monitoring program, and I'm confident that if they felt

that this was a hazardous condition, they would stop the practice.

MEMBER BARNES: Any comment from staff?

MR. HOWDEN: Barclay Howden speaking.

Just a couple of minor comments. From a federal regulatory oversight perspective, Human Resources and Skills Development Canada assists us with the oversight of this particular site, and they have not raised any concerns.

One thing we are aware of is that AECL has a very good occupational hygiene program which is being implemented in this case. As Mr. Laughten said, the Renfrew County Health Unit is also involved.

So at this point, we don’t have any concerns.

MEMBER BARNES: Okay. I’ll jump around a little bit. I come to AECL’s document, page 2, which is Chapter 2, section 2.2, Legacy quality assurance issues. And the lower half of that page, mostly in italics, gives a list of documents. “These documents collectively address the legacy quality assurance issues and they are currently under review by CNSC staff.”

When I look at the dates of those, they range from 2002 to 2005. In 2005, I think the latest one would be August. So most of them are somewhere between

one and three years old. So I ask myself why are they still under review by CNSC staff?

MR. HOWDEN: Barclay Howden speaking.

I'll ask Paul Wong to come up to the mic and respond to that. Thank you.

MR. WONG: For the record, my name is Paul Wong, Quality Management Specialist.

The documents that you're referring to are top level QA documents, program manuals, and CNSC staff doesn't typically review high level documents unless they're specifically applicable to a particular activity.

In our case, the one that we have been focussing on is the operations QA program, and it has gone through many rounds of review already since the reason for focussing on the operations QA program is because that's for an operating facility that will be the umbrella program. We have reviewed and provided comments and AECL has adjusted those programs, and we are currently in the third round of review of those revised programs.

MEMBER BARNES: But would you agree with the statement that I read that these documents collectively address the Legacy quality assurance issues.

MR. WONG: Paul Wong for the record.

I'm not sure I understand what that actually means, the Legacy QA issue.

MEMBER BARNES: Maybe we could ask AECL to explain their wording.

MR. McGEE: Brian McGee for the record.

It's intended to mean or to state that we believe that the collective portfolio of quality assurance procedures here are adequate program documents to address issues that have occurred in the past.

So in other words, with this program as defined in the documentation, in this governance, we believe it represents a robust quality assurance program definition.

MEMBER BARNES: So back to staff on these documents which are manuals, has staff gone through a process of reviewing these manuals? Does it need to? Does it approve of these manuals? Does it pass comment? Does it pass comment back to AECL? In total, how many of these documents have yet to be sort of finely reviewed?

MR. WONG: Paul Wong for the record.

This top-level program document is almost a roadmap to hundreds, if not thousands, of procedures, probably more like a thousand, and as I said earlier, we focus our intention based on resource limitation on the operations QA program and we'll drill down to the operating procedures, the system level procedures as well, that describe the activities at the ground level. And

very often this, for instance, for, say, construction activities, that doesn't happen very often and only when, for instance, when we are looking at a construction activity would we then look at those construction procedures to evaluate them.

There are just too many procedures, essentially, for us to systematically review all of them, but we do review all the ones that are applicable for the day-to-day operations.

CNSC staff does not approve procedures. We simply review them to ensure that we are maintaining oversight, ensuring that we can determine that they are in compliance, and the issue, I think, very often is that AECL has more than 10 facilities on site and each facility had traditionally had their own set of documents and very often, although we would have reviewed middle level documentation that appeared compliant to the requirements of CNSC, the lower level may not necessarily be, and the number of procedures fans out tremendously if each facility reproduces its own set of procedures and our resource limitation really limits the numbers of how far we can go.

MEMBER BARNES: So if I just pursue that further and relative to my initial comment, if I take as an example the NRU upgrade, which was a construction

activity, does CNSC staff, prior to that activity starting, look to see if there's an appropriate QA manual that would be appropriate for AECL, in a sense, to follow? It seems to me we're shutting the door after the horse has bolted in some of these cases and you're looking back at the NRU upgrade and saying, "Oops, this wasn't followed. This wasn't followed. This wasn't followed."

So again, I personally have no idea, despite our discussions this morning, whether all those errors or omissions that are listed in Appendix A were because the manual was at fault, and then here I'm being told that we've got a whole lot of manuals here and you're telling me there are even more manuals lower down, which if they are followed, there should be no problems, or is it dealing with human factors and appropriate management and reference to such manuals? Now you're telling me when -- is staff looking at these manuals and saying, "Well, we can't look at too many of these".

But it seems to me when you go through a significant activity like the NRU upgrade, I'd certainly be interested to know how staff examines these sorts of documents, in a sense, prior to construction to make sure that the situations are in place. Otherwise the process that we're looking at today seems to be a little misplaced.

MR. HOWDEN: Barclay Hoyden speaking, for the record.

I think the most important thing to understand is that we have to tackle the work in a risk-informed manner, just because, as Mr. Wong has described, we can't review everything.

What we did with the NRU upgrades. That was something that the audit was an after-the-fact as opposed to during the construction which, you understand, started in the very early '90s, the engineering and construction.

What we do now is on certain programs we'll do a sampling just to make sure that -- a sample with a sample size to go through to find out what a program and what the procedures look like and use that basically as a -– if we find problems, potentially symptoms of problems elsewhere. And this is what we pointed out when we went through the upgrades audit. There's some things that are related, not just NRU, but to others.

What we're doing now is on the risk-informed basis. We are tackling these projects at the front end. SMAGS is a perfect example. SMAGS is not before you yet because it's still going through a review at our end from this viewpoint of engineering issues because it's a waste facility, and the construction QA

where Mr. Wong is going through it in detail such that problems aren't found after the fact. The whole purpose of QA is to avoid them as much as possible.

So we are doing that and mobilizing as many resources as we can. But we can't look at everything, so we look at what we feel is important and we do it on a risk-informed basis. So certainly as he has noted, as new facilities come into play, the construction QA becomes very important. And that becomes very important as AECL goes through its decommissioning and other activities and building of enabling facilities. All of these, the QA will have to be reviewed.

As well, Mr. Wong pointed out that one of our key focuses has been on operational QA because it is the backbone of the operation of the site and we put a tremendous amount of work there.

So from a management perspective, that's where I place the resources to make sure that they are addressing the areas of highest risk and doing it in a manner so that we can do sampling and if we find issues, we can do follow-up more reactive work to ensure that it is followed up. But, certainly with the upgrades, the audit was an after-the-fact activity, yes.

MEMBER BARNES: And since I recognize that any situation like that has only so many resources, in

this case that staff has. Do you think that the balance of requirements that you're placing on the licensee, in this case AECL, to provide you with enough information to allow you to do that risk-informed decision making or process? Are those things in place to put very clearly the onus on the licensee to give you that information as opposed to you digging for it?

MR. HOWDEN: I think that is the case. Our big focus has been pushing AECL towards programs because programs can be reviewed from a high level and you can do audits on programs. If you don't have programs and are relying everything on individual processes that aren't tied to a program or tied to areas where you're relying totally on people's inherent knowledge of the systems, you just can't chase everything down. So you drive it into a program so that it's organized from a policy, program, process, procedure basis and allows you to tackle it.

So the movement of AECL over the past few years to get their programs in order is actually: one, better for AECL to be able to manage themselves and; two, from a regulatory oversight perspective is exactly where we want them to go because it allows us to prioritize by risk and focus on those particular areas.

Now, some of the lower risk areas, we will do some sampling just to make sure even though we're --

like Mr. McGee was mentioning, radiation protection, it has a “B”. It doesn’t mean that you can’t take your eye off the ball. So we will be going in over the next period of time and we will do an audit even though we’re satisfied with the program to make sure -– you know, just because it’s good today, you’ve got to keep working at it to make sure it’s good tomorrow. So we want to focus on that.

So I would say, yes, actually, things are falling in place much better now with their better development of programs. Again, the focus is on implementation which is going to drive us to put some resources against audits again to make sure that the implementation is being done. And as the audits -- if they show progress, which is what we’re expecting, we can start to shift our resources to other areas that we feel are pertinent for oversight.

MEMBER BARNES: I wonder if I could turn to the Ecologic Effects Review, and that’s found on page 8, 9 and 10 under Section 2.10 of the AECL document.

I want to address two specific aspects there. The first is the Recommendation 4 which is at the base of page 9, running onto the top of page 10, so it’s the last little section of 2.10. And it refers to, at the bottom of page 9:

> “A document summarizing 2003 metal results has been drafted to highlight concentration data for surface water and sediments. The analytical data is currently being assessed and results will be published by the end of 2006 September.”

That’s a quote.

So, again, I am puzzled as to know why these data in 2003 are being analyzed three years later when this process of the hearing today would find benefit of having this data, one assumes, and, again, somewhat frustrated by seeing that the results will come out after the possibility of incorporating them in this hearing.

So to whom should I address this? Is this just –- who is doing the analysis here? Is this a staff analysis of the data, or is it AECL? AECL? Why aren’t we having the analysis at this hearing as opposed to some months later?

MR. McGEE: Brian McGee for the record. I’ll direct that question to Ray Lambert.

MR. LAMBERT: For the record, my name is Ray Lambert.

The target to have this report submitted was due the end of this summer, so we’re actually on

target with this particular project. I can address some of the preliminary answers.

Part of addressing the recommendations involved sampling both water and sediment in various waterways, both onsite and areas not associated with our site such as Algonquin Park. So there's a huge amount of data that's being collected and analyzed over the last two years to create this file and report.

The author of the report is currently going through the analysis of the data with the intent of publishing the report on target by the end of the summer.

MEMBER BARNES: This current status report I took to be with reference to the west swamp which Recommendation 4 addressed, right? That's the paragraph above that. And the current status starts off:

> "A sampling campaign has been carried out in west swamp in the summer and autumn of 2005 to quantify concentrations of COPECs including metals, mercury and lead. This work complemented preliminary metals data that had been collected in the west swamp in previous years, documents summarizing the 2003 metal results."

I took this to be only specific to the west

swamp.

So, again, I'm intrigued by the fact that you start a new campaign in 2005 trying to look for metals and I would have thought at that time, prior to doing it, one would have analyzed the previous information, for example, in 2003. So we have a campaign in 2005. Here we are in 2006 with analysis of data in 2003 not being available to us.

MR. McGEE: Brian McGee for the record.

I'll direct that question to Ray Lambert.

MR. LAMBERT: Ray Lambert for the record.

My apologies, I should have concentrated on the west swamp. Again, the data is being analyzed and placed into a final report.

In 2003 the preliminary work was conducted to quantify the concentration of metals and sediment in water collected in the west swamp and the focus was placed on potential environmental concerns and those identified in the EER, including mercury, lead, copper, chromium, iron, cadmium, arsenic, zinc and aluminium.

The results, and it was preliminary in 2003 with further analysis being done in 2004, are being compared against the benchmark concentrations in the EER. The analysis, as part of this comparison, is a benchmark work. It's preliminary for me to give a conclusion as to

how it looks.

What I can say -– I apologize, I'm just sort of looking at the author's summaries.

The information at the moment is still being assessed and I'm not in a position to -– that's preliminary for me to release the information, but it was due to be reported at the end of the month.

MR. McGEE: Brian McGee for the record.

We can make that information that we do have available to you, available later today, if you'd like.

MEMBER BARNES: It's not so much the information. Here we're looking again at the demonstration of potential problems, in this case of west swamp which had not be really looked at before. So there had been some preliminary sampling done in 2003. You decided that what you needed to do was to address this. So you started off on a new sampling strategy in 2005; okay?

Here we are in 2006 and one would anticipate hearing some results of these two sets of data. We're hearing nothing and it appears that the analysis of the data of 2003 is being done in 2006, in a sense, after you decided on a sample strategy in 2005. This doesn't make any sense to me and it suggests that the approach

might be false. It suggests. I don't know, because we don't have any data, we don't have any information on the sampling strategies and I don't know if CNSC staff has any information or would like to comment too. But I don't find this a very satisfactory approach to the problem.

I think you have someone else approaching at the back.

MR. McGEE: Brian McGee for the record.

Jim Bond.

MR. BOND: For the record, I am Jim Bond. I am AECL's Environmental Protection Program Manager.

I'd like to start off by maybe talking about Recommendations 2, 3 and 4.

All of those Recommendations are really focussed around a better understanding of the non-radioactive, non-human biota impacts of the local Chalk River environment. Once we have better understanding coming from those three -– completion of those three recommendations, we'll be in a position to make changes to our longer term monitoring program.

So the approach that we took in lining up this piece of work -- again, specialists in this area are rather limited. We put together an integrated program to look at all of the recommendations coming out of the Ecological Effects Review. Where we could, we took

existing data from previous work and we supplemented that information with additional sampling campaigns over the following three years.

So in terms of Recommendation 4 which specifically looks at the west swamp, we're primarily looking at the KD values for local conditions; partition coefficient between the water and sediments and we're using the information that's coming out in some cases from other baseline study work that we're doing on those other previous two Recommendations to supplement that information and to put us into a position where we can put it in context.

So I guess, in summary, it's been an integrated program using a relatively small team of highly qualified specialists putting together the overall set of -- the work associated with the overall set of 10 Recommendations. And as pieces of information become available, they're plugged into the overall picture of the situation.

MEMBER BARNES: Why do you say specialists are scarce in this area?

It's a fairly standard issue, isn't it? These are contract specialists, are they, as opposed to on-staff specialists?

MR. BOND: Jim Bond for the record. Oh,

sorry.

MR. McGEE: Brian McGee for the record. I'll turn the question to Jim Bond.

MR. BOND: Jim Bond for the record.

In fact, we're -- because this is a very important long-term issue for AECL, we actually are in the process of developing pretty much a dedicated internal AECL staff to be able to address the longer term issues coming out of the Ecological Effects Review and it's our intent that as the information becomes available, we will then go back through another cycle through the Ecological Effects Review and update that information.

Again, the primary focuses that we've been using are in-house AECL experts that we in some cases have and in other cases are growing.

MEMBER BARNES: I would invite comment from staff on the procedures used here and whether the in-house capabilities are adequate to the task at hand.

MR. CRAWFORD: For the record, Gerald Crawford.

First of all, if I comment generally on the status of the EER it was issued to CNSC staff in its final form in January 2005 and it contained actually 10 recommendations. All 10 of those recommendations are built into the AECL's environmental plan which we look at

as part of our oversight to see that these recommendations are being implemented.

Specifically with recommendation four, we are -- we will be waiting to see the report. There was no specific requirement placed on AECL from CNSC staff to issue the report any earlier than September of 2006. We are generally, generally satisfied that the risk to the environment of both non-active and radioactive releases is low. However, as identified in the EER, there are some very significant areas of uncertainty which these recommendations are hoping to follow.

In terms of staffing levels, we have seen and we have been interested in looking at the staffing levels in this area for AECL and in previous inspections we've followed -- in 2002, I think, November 2002 we specifically questioned their staffing levels in the area of environmental protection. And over the following years, they have increased the staffing levels both in numbers and in the technical qualifications of those staff.

In November 2005, we followed it with another environmental inspection and the staffing levels that had been identified by AECL in their staffing review report, which was a requirement of the 2002 audit where they did a staffing needs' assessment, all the staff that

was identified were in place and they were all well qualified to do the jobs.

I guess because of CNSC oversight, we're continually putting pressure on them to use their resources and get the most out of them and that's issues for them to deal with. But we're satisfied that they have adequate resources in this area and they are significantly improved upon earlier inspection findings.

MEMBER BARNES: And if I could just go onto a second point I'd like to raise under the Ecological Effects Review and that's the recommendation two, just on page 8 and some of my comments run onto the top of page 9. So if I read a section of the recommendation and the current status, and I want just to address the Ottawa River as opposed to the inland waters -- so recommendation two which is:

> "Recommended that a rigorous evaluation of background concentrations of metals be completed in the Ottawa River... [et cetera] and that involves water and sediment."

So then we go to the current status, the next paragraph and the last three lines read as follows:

> "In preparing to do so, a detailed sampling plan and safety plan were

developed to select sampling locations in the Ottawa River, inland waters... [et cetera] on the site. A sampling plan including screening criteria was developed to select and priorize sampling locations."

If I jump over one sentence:

"Of these 21 inland locations, then six locations in the Ottawa River representing areas upstream of and downstream of and adjacent to the CRL site were selected for sampling for sediments and water quality."

So I am taking here the assumption that in this sampling strategy to show that there is no significant contamination of metals either within the water or the sediments in the Ottawa River that the basis of performing "a rigorous evaluation of these background concentrations" that the belief is that sampling in presumably two locations -- sorry -- two sites at three locations upstream, downstream and adjacent to the CRL sites is adequate to get an ongoing time series of samples for metals in what I would interpret to be a rapidly dynamic system in the river system itself, turbulence of the water and shifting sediments.

So I would like someone -- that's AECL -- to demonstrate how sampling at probably three locations, upstream, downstream and at the site and since there is only six points -- presumably, there is two in a dynamic situation -- will in fact demonstrate that there is no problem as far as metals are concerned.

MR. McGEE: Brian McGee for the record.

I will direct the question to Jim Bond.

MR. BOND: Jim Bond for the record.

The initial six sampling points that you're referring to will be used as a baseline. The output of recommendation four really is what are we going to do in the future and how are we going to fine tune the sampling program in the areas where we may have potential concern.

So I think the initial six locations were selected to give us that first sense of where we might need to further develop. Our guess at this point is that we will have significantly more routine sampling locations downstream but those have not been precisely defined nor have the number. That is part of the recommendation which will come out recommendation number four in terms of our future sampling program.

THE CHAIRPERSON: Dr. McDill.

MEMBER McDILL: Thank you.

My round two question relates to staff

document on page 13 and section 8.4 and the approval authority that is being proposed.

I wonder if staff could briefly discuss what has changed from -- what this proposal changes from the current situation?

MR. HOWDEN: Barclay Howden speaking for the record.

There is no change. What we have done here is we do have delegated authority from the Commission in a broad delegation document and we have been applying it in this manner. Our intention here was to provide that information to the Commission and to staff to make it very clear how that authority would be exercised and we felt that from a transparency point of view it would be useful.

MEMBER McDILL: And that includes 15.2, "Acceptance of financial guarantee for decommissioning"?

MR. HOWDEN: Barclay Howden speaking.

Yes, there is a caveat to this. This would be where it does not require a licence amendment because, as you know, normally this goes to the Commission for decision.

MEMBER McDILL: Thank you.

And my other question was to AECL. I think I've lost my point or two. It was with respect to sewage sludge and radioactivity and the closing -- oh, it's on

page 24.

What is the current decision on closing the CRL laundry facility? Is that still up in the air or has it been decided on?

MR. McGEE: Brian McGee for the record.

I'll direct the question to Bruce Lange.

MR. LANGE: Yes, for the record, Bruce Lange.

What we have done is to establish contact with some outside organizations located primarily in the United States but also providing services to national labs in the States and to some of the utilities in Canada.

We have given them information concerning the nature of our laundry and the volume of material. We are now looking at their proposal to see the implications it might have on the cost of outsourcing the laundry facility and we have at this point every expectation that we will pursue this type of outsourcing of the laundry.

MEMBER McDILL: Does staff have a comment on that?

MR. CRAWFORD: Staff has no comment to make on how they choose to launder their protection equipment and just basic clothing.

MEMBER McDILL: Thank you.

THE CHAIRPERSON: Dr. Dosman.

MEMBER DOSMAN: Thank you, Mr. Chair.

It's obviously a complex site and there are many questions. One has to pick and choose. So I have several, a number of questions.

The first is to AECL on training. As indicated on page 4 of the AECL document, there are some specific commitments and statements about training and, of course, this is really core and I'm just wondering if I might ask AECL, are you confident that you can achieve the training goals that you've set out on Item 2.3 on page 4 of your document?

MR. McGEE: Brian McGee for the record.

Yes, we're confident. We've made some significant progress already. A part of our program is already central to these improvements or the systematic approach to training process. Very often you'll find in this situation that perhaps not rigorously but when the program was designed it was naturally set up to those types of standards to some extent. So it's not all just starting from ground zero. There are materials that are there that can be used. We'll have to make sure that they conform to the SAT process, the Systematic Approach to Training process.

Yes, we have looked at this area carefully. It's an important area to us and we're satisfied that we

can meet the timelines.

MEMBER DOSMAN: May I ask CNSC staff, are you confident that AECL can meet the training goals that have been set?

MR. HOWDEN: Barclay Howden speaking.

I'm going to ask Richard Cawthorn, our Training Assessment Specialist, to comment on that question on our confidence in them. I'd also like him to comment on the current status of the certification of existing staff at the NRU Reactor as well.

MR. CAWTHORN: I guess just a general comment to start with. This area of training, you're aware, has had slippage for many years. There has been some new staffing. They have demonstrated some significant milestones to date.

We remain cautious about their achievement. That's why the licence condition that this will be completed by August of 2007 and we are looking forward to putting into place an oversight program which will monitor their progress and make sure that they achieve the targets they have set up.

As far as the certification, the main focus that has been going on the last six months is of bringing them to current standards with other Class 1 licences, having certified operating staff and certification of key

safety-related positions. That is progressing well. They have documented the roles and responsibilities of these positions in a new and more detailed way that we have reviewed. It needs some work but we're happy with the quality referenced to in the licence and make them a regulatory requirement.

As far as the movement to certification, the actual certifications cannot be issued until a licence references them. So we are holding, waiting for a licence to be issued with these references, and the licence conditions -- the number of licence conditions you have reflect that. All those licence conditions go to supporting these certifications.

They have a current staff that has been operating and we're looking at certifying these staff based on a period of demonstrated competence. They have submitted their applications for the current seven staff that qualify and have four years of operating experience. There is one staff member that was just recently approved as a senior reactor operator. He didn't have the demonstrated period of competence, so he is writing -- actually wrote yesterday a special transition exam, and while we say it as special transition exam, it wasn't -- it was based on what he was trained on rather than -- because the SAT base training program is not yet fully in

place. Future operators and senior reactor engineers would go through a more rigorous exam based on this SAT program they're going to have in place by 2007.

I hope that covers all of the items that you had asked. Any other questions?

MEMBER DOSMAN: Mr. Chair, I wonder if I might come back to Mr. McGee.

In a tight market, are you able to attract and retain the skilled workers you need? For example, mention was made of a health physicist and so on.

MR. McGEE: Brian McGee for the record.

To this point, we have been successful in all our recruitment activities. We are penetrating the universities through programs like UNENE. We are holding -- I don't want to call them job fairs, but we're holding -- in fact, it was underway yesterday -- several -- a group of new graduates visiting the site to see what we're about. So across the various job families, we're working on apprenticeship programs. We're working with the colleges and, in fact, we've even had some dialogue at the high school level as well to get young people interested in the industry.

As our president reminded me yesterday when we were talking, you know, at the same time the demands on staff in the industry are going up, so too is the interest

in the industry on a larger basis and we're seeing a lot of activity in the colleges and universities and seeing a lot of young people now interested again in entering the nuclear industry. So while the demand is greater, there is also a greater interest as well that's helping us cope with that, the needs of the industry.

So yes, at this point it's something that we're not taking our eye off. It's something that we have ongoing efforts in and we want to, in fact, amplify some of our efforts in this area, but as of this point in time, we're being successful.

MEMBER DOSMAN: Thank you, Mr. Chair.

I have several questions. I'll try and keep them relatively brief. For AECL, on page 35 of the CMD H9B, licence condition 7.1.1, it's to develop an action plan "to characterize all the identified hazards of land that have been contaminated by radioactive hazardous substances" and then there's conditions B and C that are essentially for monitoring, mitigating and verifying that all this has been identified, all this by July 1st, 2007. I'm just asking whether or not AECL is confident that it can accomplish all this characterization and verification within a relatively tight time framework of that condition?

MR. McGEE: Brian McGee for the record.

We have no concern about the timeline. We've done substantial work in this area already and we're confident that we can meet the timeline prescribed in the licence.

MEMBER DOSMAN: Thank you.

And just a question about the plume under the NRU. Why is it so difficult to find the leak? Would you be able to discuss that issue?

MR. McGEE: Brian McGee for the record.

I'll turn that question to Bill Shorter, but before I do, we are continuing our efforts, and Bill can elaborate on the extent to which we are, but we've also made progress in finding some of the leakages contributing to that plume and eliminating it. So the search does go on, but we have found some of the leakage and we have eliminated what we've found.

I'll turn it to Bill at this point and he can elaborate.

MR. SHORTER: Bill Shorter for the record.

As you're aware, the rod bays themselves are essentially a million-litre swimming pool. So it has a very large surface area. There are working bays. There are storage bays. So there is the obvious work activities that have to be acknowledged as you go about searching for the leak.

So the program, in terms of finding what is likely a small crack, it has certainly taken some time to develop techniques to identify the crack, and that, as mentioned at the last hearing, is a camera and dye technique. We're continuing with that process.

We're also examining the inner space between the two walls of the rod base. There's an inner wall and then there's a sand-filled space and then there's an outer wall. We've been able to determine that that sand-filled space has bay water in it. So our focus at this point is also in parallel to look at methods to de-water that sand space while we continue to look for the leak source.

So it's a bit of a needle in a haystack and it's simply going to take some time to find the crack or cracks.

MEMBER DOSMAN: Will you find it?

MR. McGEE: Brian McGee for the record.

I'll direct the question to Bill Shorter.

MR. SHORTER: I believe we will certainly do our best to find it. We'll look for other measures in parallel such as dewatering that sand space to go after the source if it proves extremely difficult to locate the potential cracks.

MEMBER DOSMAN: Thank you.

I wonder if I might ask another question, AECL. This is on page 20 of the CMD 06-H9. On Table C1 of page 20, it appears that if you compare the power production of the NRU reactor, it's down about 10 per cent in '05 versus '95, and yet if you look at a number of unplanned events -- now, I recognize that these are not reportable events. These unplanned events are up from 17 in 1995 to 113 in '05 which would represent an eight times increase, quite an exponential increase.

I'm just wondering if AECL could place in perspective the importance of these numbers. Does this indicate that the reactor is going to require evermore attention because of unplanned events as it gets older and that the power will continue to decline? So I just would ask you to place in perspective these numbers for me.

MR. McGEE: Brian McGee for the record.

The Table C2, unplanned events don't necessarily mean power reductions or reactor trips. I think that given my comments earlier about the need for more reporting about getting staff awareness to report lower level events, you know, the number of 113 in 2005 is consistent sort of with that approach. I've talked about my expectation is that we drive it up even higher.

I think what I would like to bring to your attention is that the consequential aspects, the number of

SPF trips, the number of fires, the number of lost-time accidents and do the comparison. So even though only 17 unplanned events in ’95, if you look at the more -- what I would consider to be consequential issues, they’re higher in ’95 and lower in 2005. And that’s part of the progress that comes from having that type of reporting approach and that type of corrective action program.

You know, you’ve heard me say that I want to make more progress in this area. I think on most occasions when I’ve been before you, I’ve talked about the need for that report and the need to get those events identified and my expectation that we’ll see a lot more events.

There isn’t a correlation between the events and the reactor power output. Ultimately, when we get to the point where we want to, it ultimately does support all levels of operational excellence, not just in safety.

MEMBER DOSMAN: Mr. Chair, I’m wondering, just for Mr. Van Adel, and it’s my last question -- Mr. Van Adel, you indicated the news of additional funding for AECL which presumably will be used in the context of the CRL site, and I would just like to ask you; are you confident that AECL will have the necessary financial means for Mr. McGee and his team to achieve the goals that

they have set and the commitments that they're making?

MR. VAN ADEL: Bob Van Adel for the record.

Yes, I am confident. The alignment of the objectives that have been outlined to you in respect of the performance at Chalk River and the plans that we have for the future, including the current requirements that are being posed by the licence, we have a full understanding of that and have budgeted for that.

The additional funds, of course, for the waste and decommissioning liability aspects have allowed us to accelerate and improve that program, and we are examining with the shareholder the requirements on the balance of the program, and we're satisfied that we currently have enough funding.

But as we wish to make improvements as we drive things forward, that dialogue continues with the shareholder. What we're finding is that there's responsiveness, a recognition of the obligations, and as we're bringing more and more clarity to our plans, that the government is responding appropriately.

But in addition, from time to time where we have been required to support the activities that Mr. McGee has outlined, we have taken funds from other sources and allocated them to these activities as a priority. So that to an extent that we're generating positive cash from

other activities, the first priority is to fund these programs. So I'm confident that we're in good shape in that regard.

MEMBER DOSMAN: Thank you.

THE CHAIRPERSON: Thank you.

Just before we conclude Round 2, I have one question to CNSC staff. In your licence conditions allotted in the seven categories, 7.8, 9, 10, 11, 12 and so on, you'll strengthen them in the revised document, but I want to refer to just two of them, 7.15 and 7.17. That's page 12 of 36 in the new licence conditions.

7.15 first, the way I read it, it's not as strong as it was in the Day One recommendation in which there was a reporting of every five years. The reporting of every five years, to me, seemed to be stronger. Is it or can you clarify that to me first on 7.15? Perhaps I'm reading it incorrect, but if you could clarify that?

MR. CRAWFORD: For the record, Gerald Crawford.

7.15 is the licence condition asking for a liquid effluent release point flow diagram to be produced, which was in the original -- in the Day One submission, and I don't believe there was a five-year condition attached to that particular ---

THE CHAIRPERSON: Yes, I have it here in

front of me and it is -- because I was reading it the other day and I made a note of that, that it does say that the document shall be revised if necessary, revised and reissued every five years.

MR. CRAWFORD: That particular reference is now 7.16 and it's referring to the derived release limit document.

THE CHAIRPERSON: Okay.

MR. CRAWFORD: Because we've added another condition previous.

THE CHAIRPERSON: That makes sense.

Now I just have one other question with regard to 7.17.

In the new one, the old one seems stronger, where it listed more -- it listed an A, B, C and 7.17 does not seem as strong as the old one. Would you like to comment on that? Perhaps I'm reading that incorrectly also.

MR. CRAWFORD: For the record, this refers to the sewage sludge landfill and a number of additional -- I'll start again.

In the current licence, 7.18 refers to the sewage sludge landfill only, which will be a new facility, and we're asking for that to be incorporated into an FA.

In the Day One licence, we also added the

laundry, the sewage treatment plant, the power house.

When we looked at the impact of those and on a risk basis we decided that it wasn't necessary. Those facilities do not accumulate radioactive materials and their contribution to the radioactive discharges to the environment is quite low. And so we decided we would remove them from that licence condition and focus on the sewage sludge landfill which is the one area where we are -- we see the licencee accumulating radioactive materials over a long period of time.

THE CHAIRPERSON: The 7.18 condition covers what was left out of 7.17; is that what you're saying?

MR. CRAWFORD: Gerald Crawford for the record.

The 7.18 condition is a smaller, if you like, requirement. It was based on the Day One licence 7.17 but it only refers to the sewage sludge landfill.

THE CHAIRPERSON: Thank you very much.

That concludes then the Commission members' questions, unless you have some more, Dr. Barnes, Dr. McDill?

That's fine then. We will now move to the interventions, and before I start I would like to remind the intervenors appearing before the Commission today that we have allocated 10 minutes for each oral presentation

and I would appreciate your assistance in helping us to maintain that schedule. Your more detailed written submissions already have been read and will be duly considered and I would like to move first to the oral presentation by the County of Renfrew, as outlined in CMD 06-H9.2. Mayor Ann Aikens is joining us to present her presentation on behalf of the County of Renfrew.

Mayor Aikens, the floor is yours.

06-H9.2

Oral presentation by the

County of Renfrew

MAYOR AIKENS: Thank you very much.

On behalf of Warden Bob Sweet and the 17 municipalities that make up the County of Renfrew, I'm pleased to come before you today to offer our support for the re-licensing of AECL Chalk River Laboratories for the period of 63 months.

We are very cognizant of the fact of the work that the Commission does and its careful review and its careful oversight of the technical aspects and the safety aspects of this site in our community and we are grateful for the work that the Commission does. We'd like to at this point bring to your attention some of the things that are very important to us, though, around this

facility and our community.

This facility contributes nearly a quarter of a billion dollars to our economy annually and as I go through some of these economics impacts -- and that's the bulk of what Renfrew County's presentation is on -- I want to draw to your attention, at one point in my career I was chair of the District Health Council for Renfrew County and during the early nineties we were looking very carefully at what the determinants of health were for people in our community and we relied heavily on some research that was done by the Ontario government on what exactly the determinants of health were; was it more hospital beds, was it more research?

And in reviewing that, the government put forward an argument and actually substantive information that the number one determinant of health is not more hospital beds. It's not more research. It's not more medication. The actual number one determinant of health is income. So I would like the Commission to take this under consideration when we are talking about the importance of this income base to the County of Renfrew.

There's a graph -- and again I'm not going to go through what you have because you have asked us not to do that because you already have it in front of you, but I would like to talk about the economic impact to the

Ottawa Valley from AECL.

It's our second largest employer. It provides in excess of $148 million to the current local economy. It provides -- in addition to the jobs it provides onsite -- a roll-through of approximately 1,976 jobs that are directly applicable to some of the activities on that site.

As you can well understand in a small community -- we have 95,000 people in the County of Renfrew -- this kind of economic impact and these kinds of jobs and this kind of security for our community is of paramount importance to the County of Renfrew.

Oftentimes, too, people in the County of Renfrew and different organizations in the County of Renfrew believe that this is just an Upper Ottawa Valley or a Deep River issue. We've provided for the Commission a map that provides for you the kind of impact, employment impact that AECL has throughout the entire county and when I'm finished my presentation my colleague, Mayor Jacyno, will talk specifically about Pembroke and their concerns and their issues.

But from an economic point of view, we would like you to draw your attention to that map. This is not solely a Deep River issue. This impacts employment rates, it impacts income rates and it impacts all other

activities in our business community throughout Renfrew County.

In looking at this issue the warden has asked me to draw to your attention the fact that he would've very much liked to have been here today but this is a regular meeting day for the County of Renfrew. So we've spared one county councillor to come to make these presentations to you today and to answer any questions that you may have.

But the overwhelming, obvious support for this organization and their importance to us as a community needs to be factored into any decisions.

We also would like to say that we are very confident that AECL is a good partner in our community in the County of Renfrew. They have been open and honest with us. They are seeking out additional opportunities to meet our needs as political and elected officials to make sure that our communities are safe and they look for opportunities as well to help us with our economic development.

And with that, I'm going to conclude the part from the County of Renfrew and I'd be open to any questions that anyone may have.

THE CHAIRPERSON: Thank you very much, Your Worship.

The floor is open to questions, any questions.

Dr. Barnes.

MEMBER BARNES: I'll ask this to you only because you're the first intervenor.

In your case you provide three separate items in your documentation. The first is a letter from the warden dated April the 26th, 2006 and it's a letter that, in substance, is repeated through many intervenors and could you tell me who essentially drafted the scope of that letter?

MAYOR AIKENS: The scope of the letter that comes from the Warden was drafted by the County of Renfrew staff in consultation with help and the support from AECL's communications.

MEMBER BARNES: Thank you.

MAYOR AIKENS: I'd subsequently like to draw you to the second letter that we also supplied as well, which is a follow up after we had a chance to discuss this at County Council and come up with a format for what we wanted to bring forward to you and why this was important. So the Warden followed up with a separate one that was completely drafted by the County of Renfrew staff and the background documentation is County of Renfrew Economic Development staff.

THE CHAIRPERSON: Dr. McDill, do you have any questions? Dr. Dosman?

MEMBER DOSMAN: Mr. Chair, I'd just like to ask, I note that the proposed Environmental Stewardship Council membership which is, I realize, under development -- just glancing at it, I'm not certain that includes the County of Renfrew and I'm just wondering whether you -- how you feel about the Environmental Council and what your expectations are of the council.

MAYOR AIKENS: I'd like to preface my remarks on that one by explaining that mayors in small communities, unlike big cities like Ottawa and Toronto, this is not a fulltime job to be mayor. We don't have fulltime staff.

But that being said, this Stewardship Council is important enough to me as the mayor of Deep River, besides what I do in my full-time job, to make the time to be involved in that because it's important to my community.

If the County of Renfrew is not on the original list, I think that they were clear in the terms of reference that that's a starting point. If at any point that stewardship council believes that the County of Renfrew would be involved or should be involved I'm absolutely certain that the County of Renfrew would

provide membership on that committee because they, too, would believe that it was important.

MEMBER BARNES: And your expectations for the council?

MAYOR AIKENS: At this point, my expectations are that we'll move forward collaboratively with AECL to provide some good feedback from the community about the issues that are important to us on a day-to-day basis.

I was previously on Council in the early nineties. I've seen a significant change now in the kind of information that they're seeking out from communities and their ability and their openness to listen to what community members have to say and to incorporate that into their decision-making.

So my hope for this is that as its preliminary terms of reference specify, that we'll move forward together to make the best decisions we can on behalf of the entire community.

MEMBER BARNES: Thank you.

THE CHAIRPERSON: Thank you very much for your presentation.

And I guess we will move to the next submission which is an oral presentation by the Corporation of the Town of Deep River, as outlined in CMD

06-H9.3.

I believe, Mayor Aikens, you're the presenter again in this and, Your Worship, the floor is yours.

06-H9.3
Oral presentation by the
Corporation of the
Town of Deep River

MAYOR AIKENS: Thank you very much and I'm going to switch my hats now and talk about my own community.

I'd like to thank the Commission for providing us with the opportunity to speak in support of AECL's re-licensing.

Deep River has 60 years of experience of living in harmony with AECL and we've had -- and we've benefited as a community from AECL's employees that have developed in my particular town a culture of caring and a culture of looking after each other.

Very often in these discussions there are some disconnects between the scientific and the technical information and the information that relates to the people that are actually living there. So I would like to put a personal note on this and talk to you about why I live in

Deep River.

I moved to Deep River in January of 1982, by choice, from Southern Ontario. We could have stayed in Southern Ontario but we were looking at place where we thought it was safe and where we thought it was -- provided the right kind of environment to start a family, and we subsequently did start a family and raised two children in Deep River.

I take my responsibility as a mother to look at safety very seriously, and I also take my responsibility as the mayor to look after the safety of my community very seriously. And I want to reassure the Commission that particularly as a mother raising children in Deep River I have never once had cause to be concerned for their safety because of our proximity to Chalk River Laboratories.

Had we stayed in Mississauga where we were previously evacuated because of the train derailment, there are many different things that our children, my children and the children that live in Deep River would have been submitted to, and I stress and I hope that the Commission will look at safety of a community in a whole broad context.

I know it’s really difficult when you have to look at plumes and flows and, you know, millimetres of

detection, but really what we're looking at in our environment is safety as a community. And I want to reassure you that, again, I have never ever once in all the time that we've lived there worried about the safety of my children because of the proximity to Chalk River; driving back and forth to Pembroke to see a movie on Highway 17, kind of a worry, but proximity to Chalk River, no.

And as the mayor of Deep River I want to reassure, although I've only been mayor for three years now, I have never once been given cause for concern by AECL's management, for not getting back if I had a concern, for not looking seriously at emergency preparedness and training for my community. I never once have been given the impression from any questions I've asked that they don't take what I say as head of my council and head of my community as serious concerns.

I think that we need to remember that risk is relative. No matter where we choose to live, no matter where we choose to raise our families, there are some risks combined with that. When we moved to Deep River, many of our friends that were at the same stage of their life didn't understand why we would come to a place like Deep River and they have subsequently raised their children in places like Windsor and Toronto and Oakville

where they now are looking very much for the kind of lifestyle that we've been able to achieve in Deep River.

So lifestyle, safety, all of that thing is a whole. It's not taken out of context and I think we need to be very cognizant of the fact that all industry, whether it's nuclear industry, whether it's manufacturing, all industry carries a risk with it.

And because of the oversight of this Commission I have a very high reliability in the fact that my community is safe because you're watching. This is probably the highest regulated industry in Canada. So we feel safe because of you. We feel safe because of AECL and because of the kind of commitment that we get.

I wanted to just put a personal spin on it as mayor of Deep River to reassure you that we agree that AECL should be re-licensed. We agree that it provides a safe environment for us to live in and that they're working very hard and very diligently at making that work. And at the end of the day, the people that go to work there every day are our neighbours, our families and I truly believe that they are working in the best interests to make sure that we have a safe, vibrant, healthy community.

So thank you very much for your time and I'll open it up for any questions you may have.

THE CHAIRPERSON: Thank you very much, Mayor Aikens.

Any questions, Dr. McDill, Dr. Barnes, Dr. Dosman?

Well, thank you very much for taking time out of -- as you say, the mayoralty is a volunteer job so thank you very much for coming here as being an intervenor before the Commission.

We will now proceed with the next submission which is an oral presentation of the City of Pembroke, as outlined in CMD 06-H9.4 and we have Mayor Ed Jaycno -- I hope I say that correctly -- Mayor Jaycno, Mayor of the City of Pembroke who is here to present his submission.

Mayor Jaycno, the floor is yours.

06-H9.4
Oral presentation by the
City of Pembroke

MAYOR JAYCNO: Thank you very much, Mr. Chair and Members of the Commission.

As the Mayor of the City of Pembroke, I am indeed pleased to appear here today just before lunch, and everybody is thinking about lunch and not my comments. However, I will proceed to give them to you anyway.

The City of Pembroke supports AECL's operation in Chalk River. That, without a doubt, does not need to be said and we feel it is safe and, indeed, environmentally sound.

We are confident that AECL takes their role very seriously in ensuring that public safety and the environment are not compromised and we know that they have the experience and the ability to deal with issues as they may occur from time to time. However, what is truly relevant is that they understand they are accountable to their surrounding communities and they will not put business before safety. This fact is reinforced by their willingness to meet with the municipalities of Pembroke, Petawawa, MRC Pontiac and Whitewater Region and they do this through informal breakfast meetings which, I might add, thank you very much, Mr. Vice-President, are very early in the morning, but we do accomplish some things there.

These meetings are usually arranged quarterly or as relevant issues arise or that AECL feels that we may need to have an update on certain issues. For example, new initiatives such as was previously mentioned; the modular aboveground storage units that are located at AECL. This project is now in place but, you know, we needed to know about that and people needed to know what

that particular facility was for, that it would hold the low level radioactive materials that may have come from hospitals that deal with nuclear medicine.

As well, certain updates on AECL's international trade agreements with other countries were brought into focus with our committee; recent hires; AECL's focus on safety and its long range vision for the future; very important.

These meetings are informative and allow us, and particularly myself to bring this information back to our council and to our residents.

Recently, Pembroke City Council invited Mr. Brian McGee, who is the Vice-President of AECL Nuclear Laboratories, to come to our council to a televised meeting on community television and to give us an overview of what the communities can expect from the operation. These communiqués undoubtedly are crucial to provide a conduit of information that allows the public to see that AECL is open, transparent and concerned with the needs of the communities.

Other publications -- I mean, I'm not a nuclear physicist or a scientist. I'm a lay person, but the Radiological Environmental Survey outside the Chalk River Laboratory site produced by the University of Laval gave me personally some great insight as to what's going

on. They are a non-partisan group -- and of course, the annual performance report -- and I make these documents readily available for my council and ask for their comments on a regular basis.

Not only is this communication that is provided through AECL of a regional flavour; in fact, on June the 9th of 2006 Mrs. Donna Roach of AECL was a guest presenter at the Ontario East Economic Development Commission meeting held in Calabogie. This group represents over 200 versatile communities in Eastern Ontario and, truly, this shows commitment of AECL to provide information not only to our local municipality and our local region but to others in Eastern Ontario so that they know what AECL does and what the contributions are to our society.

These folks I cannot say enough about them -- are wonderful community supporters. They represent a professional, high-profile cross-sectional mosaic of what AECL is all about. They take part in their communities and support it in a big way; crucial fundraisers -- and I have repeated this before I have been before the Board -- the United Way, the Relay for Life and a host of other projects that are close to the hearts of many within our communities.

Ducks Unlimited, I had asked the Vice-

President why they had such an interest in Ducks Unlimited and he thought that it was obvious. He said he likes to go to their functions and it's mainly because of their milk and quackers.

(LAUGHTER)

MAYOR JACYNO: Sorry about that, Mr. Chair. I had to throw that in.

It's always possible to reach someone at AECL either during business hours or otherwise. Their cooperation is outstanding and their focus to detail is superlative.

As a community Pembroke is more than aware of the enormous economic impact that AECL has in our region and as Mayor Aikens had alluded to, we just can't fathom what it would be like to be without this particular industry. I call it an industry within our community. It would be horrendous.

Many of their employees live in our community and they contribute enormously to the arts, culture and sports. They are the volunteers that are crucial to ensure that communities such as ours remain vibrant.

When the idea for Chalk River was being formulated many years ago it was a secretive project. It was built in the wilderness. It was a community onto

itself. Today, nothing can be further from the truth. They are open, transparent, concerned. They continue to provide nuclear medicine to the world. Its international reputation for clarity; excellent business acumen makes AECL truly ambassadors for Canada.

Therefore, Members of the Board, Mr. Chair, it is without hesitation that we, and I say we, the Council of the City of Pembroke, ask that you would strongly consider increasing the licensing period. Through this consideration what would happen would be the creation of an assurance for people, as Mayor Aikens had said to come to that community to live there, to feel safe. They provide a tremendous economic stability to our region.

I thank you for giving me the time to be here today.

THE CHAIRPERSON: Thank you very much, Mayor Jacyno.

Questions Dr. Barnes, Dr. McDill, Dr. Dosman?

If not, thank you very much for coming and showing your support and being an intervenor for this licensing application.

We will move now -- we will alter our agenda just slightly and we will move to the next

submission which is an oral presentation by the Canadian Society of Nuclear Medicine as outlined in CMD 06-H9.37. Dr. Alexander McEwan and past president of the Canadian Society of Medical Medicine is here to present his submission. It also is -- H9.37A also is in that.

Dr. McEwan, the floor is yours.

06-H9.37 / 06-H9.37A
Oral presentation by the
Canadian Society of
Nuclear Medicine

DR. McEWAN: Thank you for the opportunity of presenting, and I am particularly grateful for allowing me to present before lunch. It is my wedding anniversary today and my wife is grateful to you for allowing me to get back to Edmonton.

DR. McEWAN: I am representing the nuclear medicine community effectively in North America. I am also President Elect of the Society of Nuclear Medicine in the United States, and that will cross-reference to H9-34, a written submission by the Society of Nuclear Medicine, and through these two organizations to the approximately 12 million patients annually who we serve in North America.

Nuclear medicine is a small component of

medicine. It fits within the diagnostic imaging services. It's in parallel with standard radiology which I think everybody is aware of. Within nuclear medicine we use radio tracers not so much to look at abnormalities of function caused by disease -- abnormalities of structure, but to look at changes of function caused by disease and to use that to direct therapy. We can also use nuclear medicine techniques for therapeutic applications.

In this slide I have outlined four of the key nuclear medicine procedures and comparing them with radiology procedures.

Of those four procedures, the routine nuclear medicine procedures using technicium-99M form the bulk of our work and this is the area of our work which is absolutely dependent upon the output of molybdenum-99 from NRU.

In addition, radioisotope therapies are an increasingly large part of our work. This is where we direct radioactive therapies specifically to tumour sites. The bulk of this work also is supported by products that arise out of NRU.

A small amount of background to what nuclear medicine is:

In this slide here I'm showing a radioactive label which is typically technicium-99M. This

is targeted to a tracer which will identify a specific disease phenomenon, a specific abnormality caused by or related to cancer or an abnormality of function within an organ system that is caused by cancer or cancer treatment.

This radio tracer is then injected into the bloodstream and will target specifically the cancer sites or cardiac abnormalities or neurological abnormalities in which we have a diagnostic role to play.

The amount of radiation given by this is typically much smaller than is used for CT scanning and, of course, if we can target the cancer to deliver a small amount of radiation to take a picture, we can use the same targeting strategy to deliver a very large amount of radiation directly into the cancer cell to treat it by radiation from the inside out as opposed to from the outside in, which is the conventional approach in external beam radiotherapy.

Radiopharmaceuticals in nuclear medicine mostly use reactor-produced -- mostly use radio tracers, radiopharmaceuticals that derive from reactor-produced products. Typically, 95 per cent of our procedures at the moment will either use technicium-99M, the bulk of them, or a small number will use iodine-131. At the moment, cyclotron-produced products relate to only about five per cent of all our diagnostic procedures.

And so the contribution of NRU to the practice of medicine is enormous and, indeed, without the contribution of NRU, nuclear medicine on this continent certainly would not exist.

Therapeutic products, the bulk of the products that we use relate to iodine-131 and iodine-125 but there are some other radioisotopes which we use therapeutically as well.

If we look at how this works in patient care to provide a fairly rough flow diagram, the reactor produces the molybdenum-99 which is then processed by Nordion as a wholesaler, if you like, to the retailers who produce the generators which manufacture our technecium-99. These retailers include General Electric, Bristol-Myers Squibb and Mallinckrodt.

So the technecium-99 is produced from a generator supplied to the hospital. It’s mixed with a pharmaceutical to produce the radiopharmaceutical which is then introduced into the patient for diagnostic and therapeutic studies.

This is a busy slide and I don’t intend to go through it in detail at all. Suffice to say that the diagnostic and therapeutic applications of nuclear medicine cover most areas of medical practice. The areas where there is the greatest utilization include the

management of patients with cancer, with heart disease, with neurological diseases and, increasingly, following transplantation. We can use it both diagnostically and therapeutically.

Therapeutically, the main area of use is in the treatment of patients with overactive thyroid glands and with thyroid cancer.

I am providing three clinical examples just to give some context to the work that we do. This is a young boy of eight years old. This is a standard bone scan produced with the technecium product. He presented with a stiff painful knee on the right. X-rays were normal; clinical examination was largely unhelpful.

I think you can see, if you can follow my pointer, that if you compare the left leg with the right leg, there is a lot more radio tracer accumulating here than there is here. This is a radio tracer that concentrates in sites of bone injury. This child had an osteomyelitis, an infection of the bone of the lower part of the leg. The likelihood of permanent damage is related directly to the time between presentation and the initiation of treatment. Nuclear medicine remains the only technique which will provide an early diagnosis in this group of patients.

Coronary artery disease is the major cause

of death in North America. One of the key issues that we have is can we actually prevent sudden cardiac death in patients at risk?

This is a patient who presented with angina and in this we are looking at blood flow in the heart. If we look at these two areas here, this is taking a section through the heart and looking at it from the side. So what we are looking at in the blue area here is the chamber in the middle of the heart and this is the blood flow in the muscle of the heart. This is when the patient is exercising. This is when the patient is resting.

There is an area down here which I think you can see, where there is more blue than red and here there is more red and yellow than blue. This reflects a reversible defect. If this is allowed to continue without intervention this patient will suffer a severe heart attack and will have a poor outcome. By diagnosing the presence of this blockage which at this time is reversible, we can intervene and produce significant benefit to the patient.

And finally, in the management of cancer, thyroid cancer is the most commonly increasing cancer in the country and it is the one with the most rapidly increasing incidence. This is most found in Canada, in Alberta and in southern Ontario where the increase is

significant and parallels the largest increase that we see across the world.

Thyroid cancer at the moment is typically striking young women between the ages of 18 and 30. The treatment of thyroid cancer is the use of radioactive iodine-131 and this is because thyroid cancer cells concentrate this and we can use this to directly introduce radioactivity into the cancer cell and kill it.

And I've provided an example of a 29-year old woman who presented in 1987 at the Cross Cancer Institute. All of this dark area here and here reflects cancer throughout the lungs. In 1993 after five treatments with radioactive iodine, this patient is cured. She has subsequently had five normal, very healthy children and I have to say is one of our star pupils. We're delighted to have been able to contribute to her good health and to her longevity and we're delighted to be able to partner with all of our colleagues in industry extending all the way back to NRU who make this type of curative treatment possible.

Nuclear medicine procedures are common. We perform about four and half thousand procedures every day in Canada; something over one million procedures a year in this country, about 12 million procedures in North America and between 20 and 25 million procedures every year

worldwide. So this involves a very large number of patients.

In Canada approximately 90 per cent of all diagnostic nuclear medicine procedures require molybdenum-99 from NRU. You could say that almost all nuclear medicine treatments performed in Canada use NRU products. This is absolutely critical to the care of my patients and to the patients of my clinical colleagues.

And I think it's interesting to recognize the worldwide impact that this organization has in the production of the raw materials that we use for our clinical practice. We think about 50 per cent of all diagnostic procedures worldwide ultimately will use products produced from NRU, and we think that maybe up to 20 per cent of worldwide nuclear medicine therapies are using products which relate back to NRU.

The Canadian Society of Nuclear Medicine and the Society of Nuclear Medicine in the United States strongly support this licence re-application. The work of NRU is critical to our ability to help our patients. I work in a cancer centre and we try and work with this motto on a daily basis to bring some help and relief to our patients.

I am grateful, again, for the opportunity of presenting to the Commission and if I can answer any

questions I'll be happy to do so.

Thank you.

THE CHAIRPERSON: Thank you very much for your presentation. The floor is open for questions. Any questions? Dr. Barnes.

MEMBER BARNES: Well, it's maybe not too relevant to the licence at hand, but since you addressed it, what's the suggested cause of the high incidence of thyroid cancer in Alberta and Ontario?

DR. McEWAN: If I knew that I think I might be eligible for a prize. We don't know because it is predominantly affecting young women of the -– we see in Alberta at the moment almost 500 new cases. And of those, 300 are young women. We have no idea; hormonal, environmental, we don't know. It's mirrored across the world as well. We see it in New Zealand; we see it in England and we see it in Central Europe.

THE CHAIRPERSON: Dr. Dosman.

MEMBER DOSMAN: I just wonder if I might ask Dr. McEwan, is this presentation your views or has there been a motion by the Executive or Board of the Society of Nuclear Medicine?

DR. McEWAN: A motion by the board of the Canadian Society of Nuclear Medicine and a motion by the Executive Committee of the Society of Nuclear Medicine.

MEMBER DOSMAN: Thank you.

DR. McEWAN: And it is my views too.

THE CHAIRPERSON: Thank you very much, Dr. McEwan, for coming and happy anniversary to you and your wife.

This, I believe, is probably the appropriate time to take a lunch break. Due to the fact that it is 12:21, we will come back at 1:20, which is an hour's time.

Thank you very much.

--- Upon recessing at 12:21 p.m.

--- Upon resuming at 1:25 p.m.

THE CHAIRPERSON: Ladies and gentlemen, if we'll take our seats we'll resume the hearing.

The next one on the agenda, we will move to the next submission, which is an oral presentation by the Concerned Citizens of Renfrew County as outlined in CMDs 06-H9.6, 06-H9.6A. Dr. Ole Hendrickson, researcher, is here to present his submission, and Dr. Hendrickson, the floor is yours.

06-H9.6 / 06-H9.6A
Oral presentation by the
Concerned Citizens of
Renfrew County

DR. HENDRICKSON: Thank you, Chair. Thank you, Commissioners, for this opportunity. As the Chair said, I'm Ole Hendrickson. I'm a researcher for Concerned Citizens of Renfrew County.

The main points of my group's intervention, there will be five points we'd like to cover, all of which have been touched on a bit today already; the NRU fuel bay leak, government accountability for management of radioactive wastes, our views on the five-year plan, the Federal Nuclear Legacy Liabilities Management Plan, some views on the communication and public consultation process, and also on what we're requesting be done under the *Canadian Environmental Assessment Act*.

Starting with the NRU fuel bay plume, I do recall last year's hearing on the environmental assessment of continued operations of the NRU reactor, and now when we look at the materials provided for this hearing, we find that the uncontrolled release of tritium from the NRU fuel bay is larger than the largest known controlled release of tritium which is the process sewer. My understanding is the current tritium concentrations along the Ottawa River waterfront are around a half a million becquerels per litre.

So we're wondering, if this information was available last year during the environmental assessment on

continued operation of the NRU, we're wondering if radionuclides, besides tritium, are present, at what concentration are they present and are they also in contact with the Ottawa River?

If the magnitude of this plume had been fully known at last year's hearing, would the Commission have still concluded that continued operation of the NRU until 2012 is not likely to cause significant adverse environmental effects, which was the decision that was made in August of last year?

We don't think it's acceptable that the high level waste arising from continued operation of the NRU are not fully isolated from the environment and we think a discussion of mitigation measures are needed fairly urgently to address this plume. We heard about dewatering the sand filled space between the two bay walls, but that may not be sufficient, in our view. Perhaps it's time to look at the possibility of a new fuel bay. Has that been considered? What timeline? What cost would that involve?

Now, with regard to the $320 million that's going to be allocated to clean up legacy waste, this is a very significant and positive announcement in many regards. However, the CRL licensing process may not be the appropriate mechanism for making decisions about long-

term management of wastes at the Chalk River site. We're in a hearing that really focuses on the next five years and three months.

I wish to recall Dr. Barnes' comment earlier today about linking past and present. It's very difficult to distinguish between the legacy wastes at the Chalk River site and wastes generated by AECL's own operations in the recent past and continuing into the future.

It is the federal government that is responsible for legacy wastes and is accountable to taxpayers who wish to receive the best value for tax dollars allocated to cleaning them up.

So we do feel that there is a need for the federal government to deal with this issue of both low and intermediate waste in a transparent and comprehensive fashion, and we believe there is a policy void in this area, and we go back to a 1995 report of the Auditor General on federal radioactive waste management where the auditor found that the federal government has jurisdiction and regulatory responsibility for radioactive waste and is an owner of some of this waste, which is certainly the case at Chalk River.

Very important to, I think, the public, is that the current federal regulatory policy, such as it is,

states that the objectives of radioactive waste disposal are to minimize any burden placed on future generations to protect the environment and protect human health. And the auditor, back in ’95, noted that current management is only interim. In other words, these wastes are in storage. They are not in disposal. Long-term solutions are required and we certainly agree with that. And the auditor noted that Canada has no disposal facilities for any of its high-level or low-level radioactive waste.

Now, that being said, our group does not wish to see a rush to disposal. We think this is a very significant decision which will require the public input, much in the same way that the issue of high-level waste has been through a panel review and the subject of federal legislation.

In this regard I think it’s safe to say that this represents our most serious concern about the five-year Federal Nuclear Legacy Liabilities Management Plan. I think that there is quite a bit of evidence that the Chalk River site is not suited for permanent in-ground disposal of nuclear waste, either through the intrusion resistant underground structure, the proposed IRUS facility, or certainly not for the shallow rock cavity, or definitely not for deep geological high-level waste repository, which is an option that’s at least left open

in the five-year plan.

Even the IRUS facility, it's not totally clear to us what wastes would be put in this facility. There are references to short-lived waste. We're wondering if it's possible to distinguish short-lived waste from long-lived waste, if they are actually in separate facilities, how difficult that might be. So a lot of unanswered questions even around the IRUS facility.

And when it comes to something like a shallow rock cavity, the outcome of the siting taskforce report, which was mentioned earlier by Dr. Kupferschmidt was that we have abundant evidence that the Chalk River site is seismically active. It has fractured metamorphic bedrock, high rates of groundwater flow in the direction of the Ottawa River. The last days of that siting taskforce process was a transition to a so called Deep River Disposal Project and the ultimate cost of that project was $30 million of tax money which really led to no outcome at all.

I think that this informs our view of the public consultation plan as well, where I guess like the mayors, I too am a volunteer when it comes to addressing licensing matters related to nuclear facilities up in our area. And while town hall meetings or an environmental stewardship council may have merit, neither can replace

environmental assessment. A panel review under the *Canadian Environmental Assessment Act* would afford a formally structured and inclusive process which would enable other government agencies and levels of government to participate and would provide resources for independent scientists and consultants.

So we do feel that responsible authorities, and there are several, should ask for a panel review under CEAA on behalf of several environmental groups that are intervening here today. Our group has written to the Minister of Environment requesting that she exercise her discretion under section 28 of CEAA and refer this complex decommissioning and clean-up project for panel review. We feel that accountability for this new five-year $320 million clean-up project must come from the Government of Canada on behalf of Canadian taxpayers, one-off screenings or, contrary to best environmental assessment practices, such as one project, one assessment, and as early in the planning stages as possible and before irrevocable decisions are made.

We note that if the cumulative environmental effects exercise that Dr. Thompson mentioned, which is required under section 16(1)(a), would be repeated for each individual environmental assessment as new facilities are decommissioned or built -- old ones

are decommissioned or new ones are built, it would be a rather overwhelming task, both, I think for the Commission and the public. There are multiple responsible authorities.

AECL is now, under changes to CEAA, a responsible authority. There are trans-boundary effects. There are unresolved land claims. This is a very complex project.

Our group wants to comment briefly on the new licence conditions, which are, I think, very positive in certain ways. The site-wide groundwater monitoring is definitely needed; monitoring in remedial actions for affected areas; more efforts to characterize, remediate, reduce plumes; effluent release point flow diagrams for release points to the environment; identification of all of the radioactive or hazardous waste produced onsite or accepted from outside clients. These are important amendments to the existing licence and important issues.

Our group does not want to delay action -- I want to make that clear -- by asking for a panel review. That’s not our intent. In fact, we’ve been on record as supporting prompt decommissioning. We feel that issues such as groundwater monitoring, monitoring of the river which came up a more, I think, concerted effort to do some surveys of the contaminated parts of the river, downstream

monitoring points, source terms, existing waste streams.

It was interesting to hear about the fire in the carpenter's shop and some of the data gaps that that may have created back when significant amounts of information about the historic waste were lost back in the '50's. So that creates, as people have noted, a considerable amount of uncertainty about how to proceed with clean-up and remediation actions.

Our group certainly supports construction projects for which screenings are complete or near conclusion. So the liquid waste transfer and storage, the construction of the shielded modular aboveground storage facility, recalling earlier discussions today that this facility can be quickly completed once the review of quality assurance for construction is complete and the Commission gives a green light, and certainly in light of concerns about limited storage space for solid waste, this should be given priority.

The Fuel Packaging and Storage Project is certainly a priority, getting some of the old high-level waste out of the in-ground tile holes that they're in and into a more secure state. And mitigation of the NRU fuel bay plume, there's a lot of work that can be done now. There's no reason to delay some of these actions. There is funding in place, but there is also a need for the

government, I believe, to step forward and show some accountability for the overall funding that it has provided, and I think that would actually be beneficial to CNSC, to AECL.

I'm not rejecting certainly the efforts of this Commission or of AECL itself, but arguing that these should be supplemented by efforts of others, other government departments, other jurisdictions, and independent scientists for this complex matter.

Thank you, Mr. Chair.

THE CHAIRPERSON: Thank you very much.

The floor is now open for questions. Start off with Dr. McDill.

MEMBER McDILL: Thank you.

I wonder if I could ask staff to just review, for the sake of everyone listening, the normal procedure under CEAA when a panel review was required and why at this point this particular licence is not requiring that?

MR. HOWDEN: Barclay Howden speaking.

I'm going to ask Dr. Thompson to reply to that.

DR. THOMPSON: Patsy Thompson for the record.

The *Canadian Environmental Assessment Act*

applies when the CNSC needs to exercise its authority under the Act, under section 24 of the Act, and in order to do that, we need a letter of intent or an application from a licensee, a proponent, asking for -- that we would require an approval or an amendment of the licence.

Under those circumstances we then go through the *Canadian Environmental Assessment Act* and its Regulations to determine which environmental assessment applies, either a screening level environmental assessment or a comprehensive study level assessment.

In order for an assessment to be referred to a panel, there are three factors that the Commission needs to consider. The first factor is whether the project is likely to cause significant environmental effects. So if we anticipate that a project would likely cause significant environmental effects and we are of the opinion that the project would be justified, then that is one reason for referral to a panel.

The second reason would be that the environmental impacts, the anticipated environmental impacts, are uncertain and the project is warranted. That’s the second reason.

And the third factor that needs to be considered is public concerns and whether public concerns can be addressed or not in the track that is chosen. For

example, if public concerns can be addressed through a screening level assessment, then that does not justify referral to a panel, but if the public concerns were such that they could not be addressed through either a screening assessment or a comprehensive study assessment, then that would be a third factor for referral -- for requesting that the Minister consider referral to a panel.

MEMBER McDILL: And it's the opinion of staff that none of those three is in place at this time?

DR. THOMPSON: Patsy Thompson for the record.

Currently, the process, this is Day Two of the licence renewal and AECL has not come forward with projects that would require an approval or an amendment of the licence. This is a licence renewal hearing.

And so at this stage there are no triggers for an environmental assessment on projects that are outlined in AECL's five-year plan.

MEMBER McDILL: Thank you.

THE CHAIRPERSON: Dr. Barnes.

MEMBER BARNES: I would like to follow up on a couple of Mr. Hendrickson's comments and perhaps ask AECL and staff just to get clarification on Mr. -- it's not numbered -- on the text of the submission from Mr. Hendrickson at the bottom of page 5, Item 4. It's the

implementation -- underlined near the bottom -- implementation of certain aspects of the “federal nuclear legacies liabilities management plan could create a highly significant adverse environmental impact”.

We note that the five-year legacy plan would cost in excess of $500 million to implement. Now, we’re aware, of course, that the federal government has provided or announced significant amounts of money for legacy issues, nuclear legacy issues. So I would like to get some clarification as to the plan or likelihood of expenditures of this kind of level of funding in some -- of how this is going to treat low and intermediate waste on site, again during the five-year plan of this next licence period.

MR. McGEE: Brian McGee for the record. I’ll direct the question to Bill Kuperschmidt.

DR. KUPFERSCHMIDT: Bill Kupferschmidt for the record.

Over the course of the next five years, this will call for the establishment of the Shielded MAGS facility we talked about earlier this morning. It will also bring us to the period of being able to complete a number of the projects that Mr. Hendrickson raised with regard to the liquid waste transfer and storage project,

as well as the fuel packaging and storage project as well. So those are a couple of the key components.

As part of this as well, we currently have underway a project for the construction of a waste analysis facility which will allow us to better segregate the waste and to direct a smaller quantity of waste to radioactive waste storage. There are other groundwater remediation facilities that are going to be established as well during this five-year period.

MEMBER BARNES: Thank you.

Does that amount of money that has been allocated, does that, in a sense, need to be spent through that five-year period?

MR. McGEE: Brian McGee for the record.

Just so I understand your question, are you asking if we don't utilize those funds, will we lose them? Is that the nature of your question?

MEMBER BARNES: I guess so. Is there an expectation that the money provided will be spent over roughly a five-year period?

MR. McGEE: It's a program allotment in part of a larger program, and so the cash flows year over year, our expectation is that with the program that we're putting in place, we will be able to utilize those funds in a value-added manner, and that's really critical

because we want to make sure that we get the full value for the funding.

But the expectation is -- and we're still working on the details of this with the government, but the expectation is that there will be a carryover mechanism.

MEMBER BARNES: And do you expect -- I'll repeat a question that I kind of asked earlier but just in the context of this discussion now. Do you anticipate any significant amount of those funds being used for the so called near surface intrusion resistant underground structure (IRUS) or a deeper repository onsite for lower and intermediate level waste?

MR. McGEE: Brian McGee for the record.

I'll direct the question to Bill Kupferschmidt.

MR. KUPFERSCHMIDT: Bill Kupferschmidt for the record.

As I noted this morning, we are in the process or will be in the process over the next five years of doing an assessment to better come to our own conclusion about whether or not a geological repository for low and intermediate level waste is appropriate for the Chalk River site.

As part of the next five years as well, we

anticipate completing our studies associated with the establishment of the intrusion resistant underground structure as well. That will require, again, a case to be presented to the CNSC when we have completed that analysis.

So we do anticipate completing a fair amount of assessment work over the next number of years to come to a conclusion about the next steps associated with these two facilities that Mr. Hendrickson referred to.

MEMBER BARNES: Does staff wish to comment on that or perhaps not?

MR. HOWDEN: Barclay Howden speaking.

The information presented by Dr. Kupferschmidt reflects our understanding of their plans over the next five years.

MEMBER BARNES: Okay. I just pick up on another question posed of Mr. Hendrickson and ask it to AECL, and the question was what other radionuclides besides tritium are present in the plume and at what concentrations?

MR. McGEE: Brian McGee for the record.

I'll direct that question to Bruce Lange.

MR. LANGE: For the record, Bruce Lange.

Just to clarify, when you refer to the plume, is this with respect to the NRU bays or to those

associated with the waste management areas?

MEMBER BARNES: I believe it's the NRU bays.

MR. LANGE: In that context there are small concentrations of strontium-90 also, but they are quite low.

MEMBER BARNES: And it's my understanding that that plume is -- the second part of Mr. Hendrickson's question, are these other radionuclides in contact with the Ottawa River and this plume has yet to reach the Ottawa River; is that correct?

MR. LANGE: For the record, Bruce Lange.

No, the plume is currently impinging on the Ottawa River. The concentrations of tritium are as noted in our reports, and as part of the plume, there are small quantities, small low concentrations of strontium-90 also being released.

MEMBER BARNES: Okay. Thank you.

THE CHAIRPERSON: Dr. Dosman?

Pardon me, I have a clarification just in my own mind. You said that if we were going to go to the deep depository, you would have to come back to the Commission for approval. Is that my understanding?

But what about the construction of, say, more above-ground fuel storage areas, whether it's for

liquid fuels or for other types of -- whether it be liquid waste or other types of waste; will that have to come back to the Commission also as a new licence? And that's to CNSC staff.

MR. HOWDEN: I'll ask Dr. Thompson to reply to that.

DR. THOMPSON: Patsy Thompson for the record.

Some of the waste storage facilities have already undergone an environmental assessment under CEAA, and so once the assessment is done, as AECL proposes to build the structures that have been assessed, then it would require an approval from the Commission.

Normally this is a trigger, but since the project has already been assessed, then they would be excluded from the requirement of a second assessment and the Commission could review their licence application with a proposal and make a decision under the NSCA.

THE CHAIRPERSON: So for clarification, some have already gone through the environmental assessment. They would only need then to come before the Commission for licensing of that facility; is that correct?

DR. THOMPSON: Patsy Thompson for the record.

That is correct. For example, the shielded modular aboveground storage facilities have undergone an environmental assessment and the liquid waste transfer and storage project has also undergone an environmental assessment.

THE CHAIRPERSON: That was here just recently.

Now, if there were additional aboveground storages that were required that were not identified at this time, they would have to go through an environmental assessment and a licensing application; is that correct?

DR. THOMPSON: Patsy Thompson.

That's correct.

THE CHAIRPERSON: Thank you very much.

Thank you very much, Dr. Hendrickson.

There are no further questions from any of the colleagues? If not, then we will then proceed to an oral presentation. The next submission, which is an oral presentation by the Canadian Nuclear Workers' Council, as outlined in CMDs 06-H9.7 and 06-H9.7A, and we have Mr. David Shier, President, here to make the submission.

Mr. Shier, the floor is yours.

06-H9.7 / 06-H9.7A

Oral presentation by

The Canadian Nuclear

Workers' Council

MR. SHIER: Good afternoon, Mr. Chairperson, members of the Commission.

My name is David Shier. I'm the President of the Canadian Nuclear Workers' Council. Our council, as you probably are aware, is a council of unions that are involved in the nuclear industry in Canada.

With me today, we have several members, member unions from the Chalk River site, representatives from those unions that are with me. On my immediate right is Mr. Gordon Tapp. Gord is from the Chalk River Technicians and Technologists Union. Beside Gord is Mr. Jim Arnott. Jim is from the Power Workers' Union which covers the operator staff at Chalk River. And directly behind me is Mr. Dennis Jamieson. Dennis represents the Allied Trades Council which covers all the trade staff at Chalk River. And last but not least, beside him is Mr. Ken Philopose, and Ken is a representative of the Chalk River Professional Employees Union.

We are going to be brief, as you do have our written submissions, and we're just going to make a few comments and updates.

We're going to briefly talk about an overview of the labour relations. I have some comments on

conventional health and safety, radiological health and safety, community perspective and then our conclusions.

I should indicate up front we are here today in support of the licence renewal.

In regards to labour relations, there are 14 unions at Chalk River, but there are actually only eight collective agreements. In one of the units, the Allied Trades Council, there are eight unions and they all bargain under the Allied Trades Council agreement.

And as we are seeing to date, most of the -- all of the unions, I believe, are up for contract renewal this year and there are different processes in that. Things are going well. A kind of a positive move as we see it is that one of the unions, the Chalk River Technicians and Technologists Union, has signed an agreement. This was a good agreement and it also reached to party agreement without getting into the full gambit of votes and strike tentative and things like that. So we see in the past this is what's happened and we see this as a positive move on the labour relation scene.

In regards to other areas of labour relations, everything is proceeding through the normal channels.

In regards to health and safety, we should have had health and safety first because health and safety

is a main priority for trade unions and all the trade unions on site do participate in a joint health and safety committee. We see this participation of worker involvement on these committees as improving these health and safety performance which you have seen in the licensee's submission.

The workers on the site are very aware of their health and safety rights under the legislation and time to time they exercise those rights and this does contribute to a healthy workplace.

In regard to radiological safety, we support the radiological safety program. We do see the -- we're optimistic that that's going to improve even further with the new safety culture and awareness programs that are occurring on the specific site.

In regards to the community perspective, as we heard from the local politicians, it's the members of the unions at Chalk River that reside in the community and we suggest that these workers are ambassadors of the site and they do get asked questions now and then from people and their conclusions are that people are quite happy, as we heard from the politicians, that the site is safety-managed and is not a threat to the community.

The CNWC, we do have some community involvement with the Renfrew and District Labour Council.

The Renfrew and District Labour Council is a group of unions in the area, and also several of the Chalk River unions are involved with that Council as well and do provide any updates on what is happening in the nuclear industry in the area.

Basically in conclusion, we, as the unions on site, can ensure the public that any health and safety issues that are raised on site, that the unions do take them up and get them addressed. As we say, hazards that affect workers can also affect the environment and the public and these workers are the first and foremost ones that will be affected and are aware of them and will naturally address them prior to any damage occurring.

With that, we conclude that we do support and encourage you to renew the operating licence for the Chalk River facility and with that we thank you for giving us the opportunity to present our comments and naturally any of our group is prepared to answer any questions you may have.

Thank you.

THE CHAIRPERSON: Thank you very much and I apologize for your -- I knew your name but the allergies are getting the best of me this afternoon.

So questions from staff or from Commission Members? Dr. Dosman?

MEMBER DOSMAN: Well, thank you, Mr. Chair. I'd like to ask Mr. Tapp some questions. Mr. Tapp, I take it that you're representing the Chalk River Technologists Union?

MR. TAPP: That's correct. Gordon Tapp for the record. The Chalk River Technicians and Technologists Independent Union.

MEMBER DOSMAN: Right. It's my assumption that you, the technologists, if you like, are on the frontline of potential exposures. You're in the labs. You're doing the testing and so on. Could you tell me how many members are in -- do you represent at the site?

MR. TAPP: Currently we have about 430 union members at Chalk River.

MEMBER DOSMAN: And could you tell me, obviously -- we've heard this morning a good deal about performance assurance and quality control and I would expect, without knowing the details of the site, that many members of your union who are on the frontlines are the one that have to effect change and so on. Am I correct in that assumption?

MR. TAPP: I would say yes, you are, sir. The radiation protection personnel are under our union. So they are the ones of course that are in the wites with the counters right at the scene. Many of our members are

involved in quality assurance issues in all the branches. Many of our members are involved in the safety aspects from being officers in charge, safety stewards in the buildings, to doing assessments on projects' safety and quality assurance as well.

MEMBER DOSMAN: Thank you for that description.

I'd like to ask you: How is the acceptance of -- obviously we're hearing about safety culture, about a renewed approach to quality assurance at the site and so on. This involves change. So how is the acceptance of members of your union to change, to additional training and so on? How would you describe that acceptance, embracing of change?

MR. TAPP: Well, at risk of inflating Mr. McGee's ego, I'd have to say that we're extremely enthusiastic since Mr. McGee has come on board and made it abundantly clear of his strategy of making sure that above anything else our workplace is a safe one and his contention is that if we have a safe workplace, we're going to have a productive workplace.

So putting safety first is going to increase our performance as a by-product as opposed to putting the emphasis on the performance and having safety just pick up the pieces and that attitude has created a

lot of positive sentiments and a lot of enthusiasm, I have to say.

MEMBER DOSMAN: CNSC staff on site, have you been able to notice this change in attitude, at least the desire for change and improvement?

MR. CRAWFORD: For the record, Gerald Crawford.

We have certainly noticed in the last period of time that there has been a definite improvement in approach and enthusiasm of the staff on site, yes.

MEMBER DOSMAN: Thank you.

THE CHAIRPERSON: Thank you, Dr. Dosman.

MEMBER DOSMAN: Thank you also, Mr. Tapp.

THE CHAIRPERSON: Dr. Barnes?

MEMBER BARNES: I'd just ask the unions if they have any comments on another issue that was addressed this morning and that's the issue of recruitment. Perhaps retention isn't a problem but, again, given the market conditions for trained people in Canada, do you feel, I think as Mr. McGee said, that the situation is manageable, I'll put it that way, that it's not an extreme situation at the present time?

MR. SHIER: Dave Shier for the record.

I'll make a general comment and maybe some of the other people would like to make one in regards to

unions.

The union movement actually has gone on record. We see that there's a big need to hire people and you'll never get an agreement between union and management on how people to hire and we always say "Hire more" and they'll say "Hire less". But, that said, the indication we have is that there's lot of positive moves, that there is a lot of people being hired. Whether the numbers are sufficient, that would be debatable between the parties but there is a move to hire.

As far as people being available, we've always argued that -- we hear they're not available but -- because people weren't interested in the business but what we're finding, if you don't advertise jobs, you don't know if they're interested. We hear from the employers that any time they do advertise, they get plenty of applications. So there are people out there willing to work in the industry, from our perspective.

MEMBER BARNES: I guess I was trying to ask, not very clearly obviously, not just the numbers but also the quality of applicants that you're getting.

MR. JAMISON: Dennis Jamison for the record.

Staffing levels are up in trades and we have -- we're getting good quality tradesmen.

THE CHAIRPERSON: Thank you very much.

If there are no other questions, thank you very much -- oh, Mr. Shier, you had your hand up for a comment?

MR. SHIER: Yes.

MR. PHILIPOSE: My name is Ken Philipose for the record, representing Chalk River Professional Employees Union.

Yes, this is an important question because at one time we were also concerned about the staffing levels and we did bring that up to the Joint Health and Safety Committee and we are pleased to see that there is an aggressive hiring program and we are getting good quality candidates. So we are quite pleased.

THE CHAIRPERSON: Okay. Thank you very much, Mr. Shier and your counsel for coming today and making your presentation.

We will now move to the next submission, which is an oral presentation by the Ottawa Riverkeeper, as outlined in CMD 06-H9.8 and I believe we have Ms. Meredith Brown here to present this submission.

Ms. Brown, the floor is yours.

06-H9.8

Oral presentation by

Ottawa Riverkeeper

MS. BROWN: Thank you.

My name is Meredith Brown. I am the Ottawa Riverkeeper and for those of you that don't know, we are an advocacy group that is working to protect the ecological health of the Ottawa River. We're a grassroots group which means that we work with the people who live in the watershed and we work on issues that are important to the people who swim in the river and drink the water from the river and eat the fish from the river.

So one of the reasons I'm here today is because this site is definitely a concern for a lot of people who are living in the watershed. I go around and I give talks to a lot of different groups and one of the things that almost always comes up is Chalk River Nuclear Laboratories. People want to know more about it. People want to know what's going into the river. People want to know if it's safe to swim or people want to know if it's safe to eat the fish there. So this is definitely an issue that a lot of people are interested in and that's one of the reasons why I'm here today.

Our big concerns are the plumes that are going into the Ottawa River and the plume that is currently impinging on the Ottawa River. I think that one thing I am a little bit unclear about in terms of this

management plan that's being presented for this re-licensing is what are the mitigation strategies that are in place to deal with these plumes?

Forgive me if the plethora of papers hasn't really made that clear to me, but we've seen that the tritium levels are increasing. I have somebody from AECL telling me that this is definitely an area of concern for them. Yet, when I look at what they've written in response to intervenors, they say that, you know, what's being released is small and there's no trouble. The Environmental Effects Review said that the study concluded that there are no significant adverse effects from Chalk River Laboratory operations on the Ottawa River and/or the aquatic biota.

Now, I have to question that statement. It seems very broad, especially based on some of the large data gaps that have already been recognized today and the monitoring sites that are very few and far between right now.

And in the Environmental Effects Review, I'm looking at Tables 4.5 and Tables 4.7, and a lot of the discussion has been based on the radionuclides but I don't want to lose track of the other things that are at the site: the non-radionuclides, specifically the heavy metals. Mercury seems to be a little bit of a black hole

that we don't know a lot about but has really significant impacts on the river and on human health as well.

But these two tables in particular are a result of a risk assessment, an ecological risk assessment that was done which is a really good way to see what kind of problems you have in your aquatic biota. And in these tables, it has bolded marks for values that indicate that benchmark and background exposure levels are exceeded and there's quite a few in these tables and, you know, these are things that aren't being talked about.

So I guess those are my quick evaluations, things that I'm looking at, things that people are interested in, still unclear about what mitigation strategies are in place to deal with those plumes. I hear it's a needle in a haystack. Okay, but what are the options and, in the five years, do you have plans to do anything about the plume coming out of the process sewer? Is it just going to continue as is? So that's the plumes.

And then the other concern that we have is the proposal to conduct -- and right now I realize they're just studies for the construction of the Shallow Rock Cavern but a couple of questions around that. One is, what I really don't understand is how critical this waste storage facility is to the cleanup of the site because what we are really most interested in is how can we best

clean this site up. And so is this a really important part of cleaning up our nuclear legacy, having this Shallow Rock Cavern because it looks like there is quite a large portion of the cleanup fund that is going to be designated to the assessment work for this project. I think that it's important that taxpayers know where their money is going and I think if you asked most people they would want to see their money going towards the cleanup as much as possible.

So I guess mostly I have questions about that; you know, how critical is that waste storage facility need to clean up the site and, if so, how much of the portion of the cleanup fund is going to go towards that, what is now just being called "assessment work" for the next five years?

All of these points kind of go towards -- and I know we have had a lot of discussion about the panel review and the environmental assessment but I'm hearing that, you know, you're not going to get a trigger until a proposal is actually -- a project proposal is actually submitted and talking about triggers and the potential here for numerous environmental assessments. There are many disadvantages to doing that, in terms of duplicating efforts, the inefficiency, the cost and, really, and I think the west swamp is a really good example of why it

would be good to have a panel review. You know, we have a piecemeal approach here.

Now, we have internal staff at AECL taking over this ecological effects monitoring which could raise some concerns because I think a lot of people are really hesitant to trust the science that is coming from AECL alone. Obviously, they have fantastic expertise. There is no doubt about it. But it is always nice to have independent reviews. That's why I like the questions from the Commission here.

But the kind of information that the public needs I don't think is going to come out of any kind of environmental stewardship council. If you have a full panel review you can -- the public needs to know things like, so what is in the plume and what do those levels mean to the aquatic health of the river, to the biota in the river, to human health? Who sets the guidelines? How have those derived limits been -- how have they even been concluded on?

So really, questions like that and can we expect -- is there anything that we can do about this while we are operating the facility? You know, I think people see the need for the facility but there's also, you know, the double-edged coin that people want to make sure that we are impacting the river and the aquatic health of

the river and our own human health as little as possible.

So I really feel like right now the public's view is that the waste management operations have been not very good to date. Their track record is not great and I think there is significant public concern about operations at the site.

So those are my points. Thank you for hearing me out.

THE CHAIRPERSON: Thank you very much.

Questions from the Commission? Dr. Barnes to start off.

MEMBER BARNES: If it is not an inappropriate question, has your organization yet made a decision whether or not to participate on the Environmental Stewardship Council?

MS. BROWN: We haven't made a decision. I don't really have any information except a short email to ask if we'd be interested in sitting on the council, but I have no idea what kind of responsibilities the council would take, what kind of decision-making authority they would have, what kind of influence they have. So I don't have enough information to answer that question.

MEMBER BARNES: So when you were sent the letter you weren't sent the sort of outline of the terms of reference basically for the council that we have in

this document? It's about a six page ---

MS. BROWN: Oh, yes, I probably was; I probably was but, yes, I haven't had enough of a discussion on that to make a decision.

MEMBER BARNES: Okay, thanks.

THE CHAIRPERSON: Dr. McDill.

MEMBER McDILL: Thank you.

I wonder if I could just ask AECL to outline; as the studies come in, I think you have a plan for a variety of dates -- July 31st '07 and I think there is another one -- there are several of them, for plumes.

Could you just briefly outline when those are coming in and how you plan to react to them with respect to mitigation?

MR. McGEE: Brian McGee for the record.

I'll direct the question to Bruce Lange in a second but before I do, I would just like to make a couple of observations. There has been some really good input from some of the intervenors here today and I think it highlights the value of the Environmental Stewardship Council for us and what can be gained by having these types of discussions and influences in our thinking.

The other thing I'd say to you about the plumes, you know, when we -- this is an area where we don't want to let the science get in the road of good

management. When we talk about the quantities from the plumes entering the river and so on, from a scientific basis they are small quantities and they are well below regulatory limits and known limits to health but that doesn't change -- and I guess this is another way of highlighting the importance of these types of discussions with the community and the Environmental Stewardship Council. It doesn't -- the science doesn't change the feelings of the people in the community and that's really what we want to act upon to be good, responsible corporate citizens.

So with that I'll turn it over to Bruce Lange.

MR. LANGE: For the record, Bruce Lange.

Commissioner McDill, I assume you're referring to the July 2007 -- that's the licence condition associated with the plumes?

MEMBER McDILL: Yes.

MR. LANGE: Yes, thanks for the clarification.

There are three parts to that licence condition; clarify all identified plumes in terms of spatial distribution, loadings of radioactive and hazardous substances to the environment and their potential environmental effects.

We in fact have been characterizing the plumes for a number of years. We did reach an agreement with CNSC staff in February of 2002 on a schedule for when we would update the information on those plumes. Generally, it's between a five and a ten-year period that we have between the characterization process. So we think we are in good shape to address that particular licence condition by virtue of the study that we've already done and, in fact, agreed upon approach with CNSC staff. Although, if there's adjustments to that schedule that the staff would like to see, we'd certainly be open to discussing that with them.

Secondly, is to assess the adequacy of the current groundwater monitoring activities. About 10 years ago we established what we call the Operational Control Monitoring Program. That was meant to be a very broad program. We decided to look at not only the radio-nuclides but also other contaminants, non-radiological contaminants. For a period of five years we performed a baseline study to get a feeling for what was out there. We had over 100 wells and we were looking at approximately 9,000 analyses every year. At the end of that five-year period we had an independent consultant look at the results, give us advice as to what they felt was the adequacy of that program. Their report actually indicated

that we probably didn't have to be sampling as frequently as we were and, as a result of that, we established what is now called the Groundwater Monitoring Program that we report to CNSC staff on an annual basis.

So again, we have taken a look at the adequacy. There may be some gaps that CNSC staff feel exist and we'll certainly have to discuss that with them to see the extent to which we have to provide additional information.

Thirdly, is to include when necessary, based on assessed environmental impacts, plume remediation and reduction activities. We have a broad range of activities in place to address the plumes. That includes actually stopping or upgrading treatment facilities so we are no longer discharging radioactive liquid to the environment. We are removing source terms. By that I mean, as I mentioned, I think earlier, removing glass blocks, for example from the outer areas. We are draining the NRX bays to remove that as a source term. We are diligently scrutinizing areas around NRU to determine what that source term may be.

The third aspect is that we are putting groundwater treatment facilities in place that actually physically remove the water from the ground, extract the radio-nuclides and then re-release the water after the

radio-nuclides have been significantly reduced.

So in terms of those three areas, I think they were in good shape. We have, in fact, over the years been doing all of those things. We do for sure want to speak with CNSC staff to see whether there may be gaps in what we are doing and what they feel is necessary but we feel in a pretty good position to address that particular licence condition in the time period as specified.

MEMBER McDILL: Thank you, and because the intervenor raised it, what about the process sewer?

MR. McGEE: Brian McGee for the record.

I'll ask Bruce Lange to answer that question.

MR. LANGE: Yes. Sorry, Bruce Lange for the record.

The releases from the process sewer are a somewhat different vein than the plumes that we are talking about for both NRU, NRX and for the waste management areas.

That discharge is closely monitored and the results have been reported. The concentrations are known. The implications and the impacts of those discharges have been addressed as part of the Environmental Effects Review and we, in fact, have just recently even further increased the nature and extent of the methodology that we use to

sample the effluent from the process water sewer.

I hope that answers the question. If not, I'd be pleased to continue if there is an area I haven't somehow covered.

MEMBER McDILL: Perhaps I should ask the intervenor if that is helpful. I think you asked the question would it ever stop, with respect to the process sewer and I am not sure if I should relay that question or ask you if you are comfortable at least to some extent at this point?

MS. BROWN: Yes, I think from what I understand is that the plume from the process sewer is going to continue as is. It's being monitored but you feel there's no concerns and there is no reason to mitigate.

MEMBER McDILL: AECL to respond to that?

MR. McGEE: Brian McGee for the record.

I'll direct it to Bruce Lange.

MR. LANGE: For the record, Bruce Lange.

We don't believe that the releases from the process sewer are causing an undue impact. However, having said that, we are always looking for ways to improve or lower the releases from the site as a whole. Our earlier discussion about the possibility of shutting down our laundry facilities entirely are directed at

exactly that approach. Whenever we can find a way to reduce emissions, then we will take the action to do so.

MEMBER McDILL: Thank you.

For completeness, would staff care to respond to the series of questions that were just posed?

MR. HOWDEN: Yes. Barclay Howden speaking.

I'm going to ask Dr. Patsy Thompson to respond to give you a bit of an overview of our regulatory approach to the releases from this particular site.

Thank you.

DR. THOMPSON: Patsy Thompson for the record.

A number of issues have been raised about both contamination and plumes on site as well as releases to the Ottawa River. A number of assessments have been done through the years and particularly since 2000 by CNSC staff, by Environment Canada to support a number of initiatives.

Environment Canada did quite a detailed investigation of releases to the Ottawa River but, as well, from different areas on the Chalk River site and discharges through the streams and lakes onsite to determine whether the levels of contamination would constitute a violation of the *Fisheries Act*.

We supported -- CNSC staff supported

Environment Canada in that investigation and through that process over a three-year period, extensive data was collected both onsite and in the Ottawa River. Sediments were collected, tested for toxicity and, collectively, that information indicated that the levels were elevated relative to background for many metals or organics and radionuclides but in no case did they constitute a risk to the biota in the Ottawa River. There was some limited risk on the Chalk River site and that limited risk was confirmed by the Ecological Effects Review conducted by AECL that was then reviewed and assessed by staff.

Similarly, an assessment was done under the *Canadian Environmental Protection Act* which people have referred to as the priority substance list assessment for radionuclides and the Chalk River site was included in that assessment and that conclusion confirmed the other two conclusions that there are elevated concentrations but they do not constitute a significant risk because often the contamination is limited to very small spatial areas.

Having said that, the information was collected by staff and when we requested that Ecological Effects Review be done, it was to support decisions under the new Act at the time in 2000, to determine if there were risk areas that needed immediate remediation and mitigation.

The reviews have indicated that although levels were elevated that immediate action was not necessary, but it's something that AECL needs to do to be in conformity with the Act and the regulations.

We have addressed the issues onsite on a risk basis, focussing on the uncontrolled, unauthorized releases from the operating facilities. And for the waste management areas, we've requested that it's implied in licence conditions additional characterization so that they can be mitigated and remediated if necessary.

AECL has been engaged in that process for a number of years, but now it's been focussing more on regulatory requirements and the framework that CNSC staff can monitor and take action, if necessary.

In terms of impacts on human health, for people who are using the Ottawa River, extensive monitoring data has been collected over the years and drinking water supplies for municipalities downstream of the Chalk River site and all the information collected over the years has indicated that the levels are not posing a health risk and are well below the drinking water guidelines set by Health Canada.

MEMBER McDILL: Thank you, Mr. Chair.

THE CHAIRPERSON: Thank you very much.

Dr. Dosman, do you have any other

questions?

MEMBER DOSMAN: No.

THE CHAIRPERSON: If not, thank you very much for coming, Ms. Brown. We appreciate your intervention.

We will now move to the next submission which is an oral presentation by Lynn Jones as outlined in CMDs 06-H9.9 and 06-H9.9A.

Ms. Jones, the floor is yours.

06-H9.9 / 06-H9.9A

Oral presentation by

Lynn Jones

MS. JONES: Thank you very much Mr. Chairman.

Since I'm not here representing any group, I thought I would just say a quick word or two about why I wanted to intervene today and why I hope that I might be able to bring something useful to the proceedings.

I'm a resident of the Upper Ottawa Valley and I own property on the Ottawa River downstream from the Chalk River Lab site. I'm also a member of Concerned Citizens of Renfrew County. My educational background is in community health and in the mid-1990s, I acted as a secretary to an inter-provincial committee of mayors and

reeves and concerned citizens from Renfrew and Pontiac Counties who were opposed to the siting of a cavern for radioactive waste disposal on the Chalk River property.

My intervention today is focussed on nuclear waste management. I would like to discuss two major points: one, the unsuitability of the CRL site for permanent disposal of nuclear waste, and two, the implications of fossil fuel depletion for nuclear waste management in coming years.

I have to say I was disturbed to learn that in-ground disposal of nuclear waste figures prominently in AECL's preliminary decommissioning plan for Chalk River to the tune of $400 million for a shallow rock cavity. I would venture an educated guess that at least a few of the oral and written intervenors that are supporting AECL's licence application today were unaware that this plan to bury decommissioning waste beside the Ottawa River was part of the licence application.

And I think we should be clear on that point. I mean, it's right here in this basis of the cost-estimate for the Chalk River Lab's decommissioning liability: "Shallow rock cavity; 6.1.06.3, $401,407,264 estimated".

With respect, I would suggest that maybe the Commissioners should ask their legal counsel whether

the trigger is in place for a panel review because the letter that was sent to Linda Keene this morning from the Concerned Citizens of Renfrew County –- she was copied on a letter to Minister of Environment, Rhona Ambrose.

We had expert –- or, CCRC had expert legal counsel, expert in environmental assessment, who was of the opinion that the trigger is quite clearly in place by the fact that this is part of the licence application at this time and there are also significant licence amendments that pertain to environmental monitoring and so forth on the site.

As has already been mentioned here today, the possibility of in-ground nuclear waste disposal at Chalk River was thoroughly investigated in the 1990s by a federally funded siting task force mandated to find a willing host for over a million tonnes of historic radioactive waste from the Port Hope area. Technical studies at the time described the bedrock as fractured and permeable with ground water movement through the site into the Ottawa River. The area was also noted to be seismically active and the Ottawa River is itself a major fault line.

I brought one of the technical studies with me today. It’s entitled “Preliminary Performance Assessment of a Proposed Low-Level Radioactive Waste

Disposal Facility, Town of Deep River, PA-2". There are two figures in there that I would like to bring your attention to, figure 6.9 and 6.10. I'd be happy to leave copies of them with the secretary if they would be of assistance in your deliberations. They clearly show the projected migration of radium, uranium and arsenic into the Ottawa River from the proposed cavern.

Municipalities downstream from AECL on both sides of the river, in Quebec and Ontario, did not take kindly to this information. In 1997, 23 municipalities and both county counsels from Pontiac and Renfrew counties passed resolutions which read, in part –- I'm only going to read you some of the clauses from the resolution:

> "...whereas the proposed site is in an earthquake-prone zone with fractured bedrock and high rates of subsurface water movement;
>
> whereas federal policy states that there must be sufficient isolation of low-level radioactive waste to ensure that current and future populations and their water supplies will be protected;
>
> whereas an initial environmental screening show that the Ottawa River

which provides drinking water for millions of Canadians would be permanently contaminated with arsenic, radium and uranium by the proposed cavern;

and, whereas existing AECL waste sites contain dozens of times more radiation than all of the Southern Ontario waste proposed for this facility and are leaking radiation into the Ottawa River and posing a threat to the public health and the environment, therefore it is resolved that Members of Council demand that the federal government abandon plans for radioactive waste disposal at the Chalk River property of AECL and further resolve that Council urge the federal government to immediately commence an environmental assessment and clean-up of the Chalk River property of AECL."

As I mentioned, this resolution was passed by 23 municipal councils in Pontiac and Renfrew County and Pontiac and Renfrew County councils in 1997. Serious

concerns and calls for a panel review were also registered at the time by regional municipalities of Hull, Aylmer and Ottawa-Carleton and the Algonquin Golden Lake First Nation.

So it would seem that Chalk River is not a place to dispose of radioactive waste and that there is widespread agreement on this point in downstream communities.

I would like to now make a few brief comments on the implications of fossil fuel depletion for nuclear waste management.

According to many experts, the world is on the cusp of a major shift from abundant and increasing supplies of cheap oil to declining supplies of increasingly expensive oil. Oil is a very special substance as a liquid fuel for all kinds of transportation. It is irreplaceable. It is extremely concentrated. It is said that one barrel of oil now selling for about $70 does the equivalent work of 25,000 hours of human labour. The cost of that one barrel of oil has been forecast to rise to as much as $200 within the next decade or two.

The shift to a declining supply of ever-more expensive oil has major implications for almost everything we do, including nuclear fuel generation of

electricity. As we enter the period of declining oil supplies, the price of nuclear electricity will rise significantly because of all the places where burning of fossil fuels is a necessary part of producing electricity from nuclear fuel, considering that fossil fuels are needed to power the machines that mine uranium ore, transport ore to refineries, separate the uranium, roast the “yellowcake”, mine and manufacture other ingredients for fuel fabrication, construct and maintain power plants and decommissioning facilities and care for radioactive wastes.

The making of concrete from cement key material in construction and decommissioning of nuclear facilities is very fossil fuel-intensive, requiring oil and natural gas to quarry, crush and roast the limestone, et cetera.

This multitude of requirements for fossil fuel burning makes it misleading to speak of nuclear energy as a carbon-neutral technology that can greatly reduce greenhouse gas emissions. But more relevant to today’s discussion, the implications of oil depletion for nuclear waste management are great.

For many years now we have been enjoying the benefits of nuclear-generated electricity and accumulating large quantities of high-level waste, looking

forward to a time in the future when our technology will have advanced to such a degree that we will come up with a suitable solution for the waste problem.

Unfortunately, a suitable solution seems just as elusive as it ever was. More importantly, it is soon going to get a great deal more challenging to deal with nuclear waste. The costs of dealing responsibly with nuclear waste are likely to rise several-fold as oil becomes increasingly scarce and expensive.

Canadians need to debate whether or not it is ethically acceptable to keep increasing the quantities of nuclear waste, given that future generations will have neither the wealth nor the abundant supplies of fossil fuel necessary to properly manage these waste in perpetuity.

In the meantime, nuclear facilities such as AECL should not be licensed to produce more waste, only to stabilize those already created in above-ground monitored storage.

To conclude, in-ground disposal of nuclear waste at CRL is not appropriate given the characteristics of the property and is not acceptable to downstream communities. I would strongly urge you not to approve AECL’s preliminary decommissioning plan with the shallow rock cavity as part of it.

Monitored retrievable storage of nuclear waste is much more appropriate at Chalk River. Possible rapid rises in fuel prices in coming years make it desirable to stabilize leaking radioactive wastes at AECL in monitored above-ground storage as soon as possible. The question of the long term management of AECL's legacy decommissioning and high-level fuel waste in the face of dwindling oil supplies is not one that should be left to AECL and CNSC alone to solve.

An independent panel should oversee this process to eliminate any conflict of interest in the decision making, to allow the Canadian public to participate meaningfully, to enable funding for intervenors and independent experts, and to ensure that the best possible decisions are made on this matter that will affect millions of Canadians for thousands of years into the future.

That concludes my intervention. I would like to thank you for the opportunity to contribute to the proceedings and I wish you well in your deliberations.

THE CHAIRPERSON: Thank you very much, Ms. Jones.

Questions? Dr. McDill? Dr. Barnes?

Thank you very much for your presentation and it will be considered as all are.

Now we will move to the next submission, which is an oral presentation from Skye Faris, as outlined in CMD 06-H9.10.

Ms. Faris, the floor is yours.

06-H9.10

Oral presentation by

Skye Faris

MS. FARIS: Good afternoon, Mr. Chairman and Commissioners.

I understand that you already have a copy of my May 29th letter and so at this time I would like to emphasize what I consider the most interesting points and questions that I have.

I am here today because I love this valley. I love the powerful rivers, the beautiful rock formations, fragrant forests and the cheerful people. They are home to me and it is very important to me that we take care of this valley.

I know we have all heard arguments concerning underground and above-ground storage of nuclear waste. I invite you to consider the difficulties in the idea of the storage of Chalk River's nuclear waste deep in the rock of the Canadian Shield. All of the rock on the planet is inherently unstable, and the Canadian Shield is

no exception.

Both earthquake activity in the Shield and the slow vertical and horizontal movements of bits and pieces of the Shield are ongoing and unpredictable.

Dr. Ralph Kretz, who is a retired Ottawa University Professor of Geology, has studied the rock of the Canadian Shield for 40 years. He emphasizes that all rock bodies are highly fractured by these natural processes. Dr. Kretz states that:

> "When the opening of the fractures occurs at depths of three kilometres, for example, the openings are immediately filled with water, some of which is surface water. The movement of water to and from the surface through fractures and faults in plutonic and other rock is not fully understood and, over a period of a few centuries, is unpredictable."

This kind of research supports our need to store nuclear waste in other ways.

The storage of Chalk River Nuclear Laboratories nuclear waste in aboveground structures is an attractive alternative. Such structures can be designed to keep the radioactive contents separate from the air,

water and soil of the Ottawa Valley. Over long periods of time aboveground containment vessels can be carefully monitored and repaired and replaced as required.

The Chalk River Laboratories are already home to an example of this type of containment, what is called the MAGS or the modular aboveground storage. Good for them. Such aboveground storage supports our hope too that we will learn to work with these very lethal materials in new, exciting and ecologically-sound ways.

As Professor Kretz says, and I quote:

> “With regard to high level waste, some procedure analogous to transmutation or some entirely new procedure could in the future reduce the toxicity of wastes or make them useful.”

Professor Kretz goes on to say, and I quote again:

> “Indeed, when we compare the physics of only 120 years ago we find that the changes that have occurred in this short period of time are both enormous and unforeseen.”

Let us give ourselves this gift of time. To me, now is the perfect time to licence Chalk River Nuclear Laboratories to fully focus its energies and other

resources for the next 63 months on storing its nuclear wastes in aboveground containers on the labs' property.

Could the coming years involve connection between Chalk River's scientists and a particular scientist like Dr. Joseph Davidovits who discovered the chemistry of geopolymers in 1979? I wonder if others have heard of him.

On the website geopolymer.org it is stated, and I quote:

> "Geopolymer cements are ideal; ideal for environmental applications such as the permanent encapsulation of radioactive and other hazardous wastes."

Indeed, there was an industrial research project in Europe from 1994 to '97 with the title -- it's quite a title: "Effective geopolymer cements for innocuous stablization of toxic elements". Having to say all those details makes me smile but it still is quite a wonderful theme and title for this research project.

Dr. Joseph Davidovits, who holds more than 50 patents, directs research at a laboratory in France. Five other companies in four other countries are listed on the website as well as being involved in geopolymer research. One of these companies actually in Germany is

working specifically on toxic and radioactive waste encapsulation and treatment. The website also lists 22 university laboratories in 10 countries that are listed as being involved in the research and development projects on geopolymer science and technology.

What I have read about Dr. Davidovits is exciting to me. Could there possibly be any connection with our situation at Chalk River Nuclear Laboratories? Perhaps Chalk River scientists will create other exciting, safe, ecologically-sound materials. After all, Chalk River Nuclear Laboratories built the second-oldest nuclear reactor on the whole planet. Its name was “ZEEP” and it was activated in 1945. So we were leaders then.

Can we now be world leaders in accomplishing, in really accomplishing the task of aboveground containment of the nuclear wastes at our oldest research site?

Thank you.

THE CHAIRPERSON: Thank you very much.

Any questions from Commission Members? Dr. Dosman.

MEMBER DOSMAN: I’m just wondering if AECL has any comment on the geopolymer cement technology?

MR. McGEE: Brian McGee for the record.

We were having a bit of difficulty hearing,

I think, here. Your question was do we have any information or any knowledge of the geopolymer cement technology?

MEMBER DOSMAN: Yes, that was my question.

MR. McGEE: Thank you.

I'll direct the question to Bill Kuperschmidt.

MR. KUPERSCHMIDT: Bill Kuperschmidt for the record.

I do not have any personal knowledge about that particular technology.

MEMBER DOSMAN: Thank you.

THE CHAIRPERSON: Okay, thank you very much, Ms. Faris.

Do you have one more comment you would like to make?

MS. FARIS: These microphones are not my usual way of speaking.

Can I make one more comment of something I could have put into that presentation about the geopolymers, is what I have read is that they have a much longer life as cement. And of course any cement that is encasing radioactive materials does deteriorate, I believe, faster than cement that is not involved with radioactive materials. However, the life of these

geopolymer cements are supposed to be very much longer, many times longer.

THE CHAIRPERSON: Thank you very much for the information and I hope that both AECL and CNSC staff will take note of your presentation as we at the Commission have.

We will now move to the next submission which is an oral presentation by the Sierra Club of Canada as outlined in CMD 06-H9.11, and I believe we have Mr. John Bennett, Senior Policy Advisor to the Sierra Club. He is here to make the presentation.

And Mr. Bennett, the floor is yours.

06-H9.11

Oral presentation by the

Sierra Club of Canada

MR. BENNETT: Okay, sorry. Thank you for the opportunity, Mr. Chairman, and thank you to Members of the panel.

I would first like to apologize that Emily Moorehouse who drafted our submission isn’t available today to make the presentation so I have been drafted at the last minute to step in. So I will do my best to explain what we would like to say.

Our first comment on the request for

renewal of the Chalk River Laboratories licence is that we think the time period is too long. It should not be 63 months. We'd prefer to see something more like two years.

We are concerned with AECL's record of managing the property and it raises serious questions about the proposed decommissioning plan by AECL. We are concerned that it might simply be a continuation of the management style that we've seen in the past and we'd like to see that significantly altered in the future.

Sierra Club would also like to see some of the following elements included into any decommissioning plan.

First, a full panel review under the *Canadian Environmental Assessment Act* of the decommissioning plan. Sierra Club of Canada has co-signed a letter sent by the Concerned Citizens of Renfrew County to the Federal Minister of Environment requesting that she exercise the federal government's mandate and legal responsibility with regard to a full environmental assessment.

Second, we are very concerned about the Public Consultation Plan that it should be held at arms length from the proponent, making AECL accountable to the public rather than as it stands, so that the current Public Consultation Plan puts forth AECL and it makes it

in no way accountable to the public. It's wholly inadequate in that it requests public input but has absolutely no -- or zero obligation to act according to the requests of the public. It's even more regrettable that the CNSC staff have deemed this Public Consultation Plan acceptable. The Sierra Club of Canada request that changes be made to the AECL's Public Communication Plan to make it accountable to the public.

Third, a comprehensive waste inventory should be included in the decommissioning plan. As evidenced by the lack of clarity and the contradicting statements, it's obvious that AECL and CNSC staff are uncertain as to the full extent of the plumes and leaks, especially from the NRU.

In information and recommendations from the Canadian Nuclear Safety Commission's staff in the matter of the Atomic Energy of Canada Limited's application for renewal of Chalk River Laboratories nuclear research and test establishment operating licence it says:

> "The current leak from the NRU Reactor fuel bay has been assessed by CNSC staff to be the largest known uncontrolled release of tritium into the environment. This is similar in size to the uncontrolled release from

the process sewer."

Yet, in another part of the document it's stated that:

"After several investigations AECL recently confirmed that the observed tritium plume was caused by a leakage from the NRU rod bays. AECL estimated that the rod bays are losing between 550 and 800 litres of contaminated water per day. CNSC staff estimate that this uncontrolled release of tritium is larger than the release from the process sewer, which is the largest controlled release of tritium from the site to the Ottawa River. The continued lack of clear information on the source and size of the NRU leak and the fact that this leak was initially discovered 16 years ago and that in that time little has been demonstrated in terms of effort to stop that leak..."

Well, we just heard a few moments ago that we are monitoring it well but we haven't stopped the leak -- leads the Sierra Club of Canada to conclude that the

Commission should not award AECL a five-year licence of renewal; rather, it should request a commitment to fully investigate and repair the source of the leak and a commitment to control all leaks in the future. They are currently spilling extremely high levels of radioactivity into the Ottawa River.

Thank you very much.

THE CHAIRPERSON: Thank you very much, Mr. Bennett.

Open for questions, Dr. Barnes, Dr. McDill? Dr. Dosman?

I have one question, and that's to CNSC staff. We are talking of a 63 month licence, a five year and three month licence but we are also, I believe -- is there not a recommendation for midterm review at which time if certain conditions aren't met that it's reported to the Commission?

MR. HOWDEN: Barclay Howden speaking for the record.

Yes, Mr. Graham, in the proposal for the 63 months we just want to remind you that in CMD 02-M12 the licence period criteria, we followed that, and have laid it out for the Commission members in H9 on page 44. Included within the reporting is a midterm report in the fall of 2008 to provide the Commission with an update on

progress.

As well, we have other mechanisms such as significant development reports that we bring to the Commission for important issues.

As well, any amendments required of this particular licence would also come to the Commission.

THE CHAIRPERSON: Thank you very much, because that would be about 27 months into the licence for the midterm report, I guess.

So thank you very much.

If that's all, then, we will move to the next CMD, and thank you very much, Mr. Bennett, for coming today.

The next CMD is a telephone conference, I believe? Yes.

We will move to the next submission which is an oral presentation by Greenpeace Canada as outlined in CMD 06-H9.12 and we have -- Mr. Shawn-Patrick Stensil is joining us by teleconference conference to present his submission.

Are we hooked up for Mr. Stensil, and are you there?

06-H9.12

Oral presentation by

Greenpeace Canada

MR. STENSIL: Hello?

THE CHAIRPERSON: Yes, Mr. Stensil, the floor is yours. You may proceed, and you know the rules of procedure which this is 10 minutes ---

MR. STENSIL: I'll have to apologize as a start. I can't hear much of what you have to say. I've been online for about 20 minutes but there is a problem with the phone line. I'm assuming, however, that you can hear me so I'll so ahead with my presentation.

THE CHAIRPERSON: Yes, we hear you very well, loud and clear and, as I said, the rules are that you have 10 minutes. You may proceed now.

Thank you.

MR. STENSIL: Okay. Thank you very much.

Again, thank you for this opportunity to present to the Commission. Greenpeace Canada is very concerned with the Chalk River Laboratory site and are happy to have this opportunity to intervene at the Commission.

I'm going to touch on three points today that were talked about in our written submissions; those points being Greenpeace Canada recommends that the Commission reject staff's recommendation for a five-year licence and renew AECL's Chalk River Laboratories for a

period of two years; second, to talk about the proper review and oversight of the clean-up of the Chalk River site; specifically, the need for a panel level review of AECL's decommissioning plan for the site and; three, the future responsibility for waste at the Chalk River site.

To begin, the licensing period. Greenpeace Canada disagrees with the CNSC staff's recommendation for a five-year licence and, as stated, we recommend a shorter licence period of approximately two years to ensure transparency and public scrutiny of AECL's activity.

AECL has shown an ongoing defiant attitude towards adhering to CNSC regulations and reports of new leaks and inappropriate behaviour at Chalk River seem to be reported regularly in the media.

In 2005, for instance, it was revealed that AECL had continued to dump radioactive sewage sludge despite having committed to stop the practice to the CNSC many years earlier.

Greenpeace is also deeply disturbed to learn that a plume at the NRU reactor is dumping large amounts of radioisotopes into the Ottawa River. It is disturbing that this plume was originally identified in 1989, but it was only in 2006 that the public is informed that this was taking place.

AECL's inadequate management and

remediation of the NRU leak is an obvious reason why AECL's licence should not be renewed for a five-year period.

Again, on a fairly regular basis, environmental leaks and licensing transgressions seem to be reported in the media and we think this calls for greater scrutiny.

I will next move to the need for an independent transparent public consultation and panel review of AECL's decommissioning plans for the site.

As you know, the Commission requested AECL submit a revised communications plan as part of its decommissioning plan at last year's hearing. AECL has proposed a framework for a communication and public consultation plan in December 2005 as a means of gathering input on a proposed 300-year multibillion dollar conceptual decommissioning plan.

Greenpeace cannot support AECL leading public consultations and having final say on the feasibility and social acceptability of its decommissioning plan.

AECL has a clear interest in minimizing the financial cost of decommissioning, deferring clean-up and prioritizing radioactive wastes disposal over long-term management.

Greenpeace Canada recommends the use of a panel review under the *Canadian Environmental Assessment Act* as a more credible means of developing a clean-up plan for the Chalk River Laboratories.

Greenpeace has observed in other hearings of CNSC licensees and staff, let's call it, played dodge the CEAA trigger to avoid controversial environmental reviews in the past, most notably with Point Lepreau and Gentilly-2.

I would urge the Commission to use common sense. Chalk River is a unique site in Canada, highly complex and highly contaminated. Common sense should tell you that the environment and human health would be best protected from the hazards of this unique and complex site by an independent, comprehensive panel review. Let's not play games with the CEAA trigger.

I will next move on to waste management. As noted at past hearings, Greenpeace is concerned the federal government and its regulator, you, the Canadian Nuclear Safety Commission, have failed to establish a transparent and socially acceptable framework for managing long-lived non-fuel radioactive waste in Canada.

This is pertinent in the case in front of you today. AECL's decommissioning plan is a *de facto*, long-term radioactive waste management strategy.

Greenpeace Canada does not feel that the CNSC has the authority to approve such a plan without an accountable and transparent policy framework to ensure the safe and socially acceptable management of these wastes.

The current licensing hearing is not an appropriate means of making such important decisions. I would note that the federal government's 1996 radioactive waste policy framework states that:

> "The federal government has the responsibility to develop policy, to regulate and to oversee producers and owners to ensure that they comply with legal requirements and meet their funding and operational responsibilities in accordance with approved waste disposal plans."

AECL has proposed a framework for communication as a means of gathering input on the proposed plan. Accepting this plan would basically allow the nuclear industry, by way of AECL, to develop policy regarding what is socially acceptable for the management of these long-lived non-fuel radioactive wastes.

Given that the federal government has a responsibility to develop policy and regulate, Greenpeace Canada believes that the Commission should refer this

issue back up to the federal government.

I can tell you what the AECL-led consultation would entail. Intervenors would be able to talk about anything, but in reality, nothing would be on the table. Unfortunately, again and again this is the experience that civil society groups or community groups have in these industry-led type consultations. This is not meaningful consultation or effective means of building public trust.

I would also note that the Ministry of Natural Resources, in its funding announcement -- this was noted in the new document put out by AECL in response to intervenors -- AECL noted that the Minister of Natural Resources Canada, in the funding announcement of 2006, also indicated that “NR Can will begin high-level consultations on the overall decommissioning strategy”.

I would like to ask the Commission what does this mean? Is this an NR Can-led consultation or is this an AECL consultation? This is very relevant to whether public intervenors can trust the process that they’re participating in.

Finally, I would like to touch on another point that I spoke of in the written submission.

Through Access to Information, Greenpeace Canada has acquired an earlier version of AECL’s Federal

Nuclear Liabilities Management Plan, which was a submission to these hearings. This document raises questions about the long-term strategy for managing waste at CRL and the application of CEAA.

According to the introduction, this document was based on significant input from various stakeholders, including NR Can and CNSC. So I'm assuming that the CNSC staff present today would be aware of some of these discussions.

Greenpeace Canada would like to highlight to the Commission that AECL seems to be considering -- and the federal government -- seems to be considering a transfer of legacy liabilities to a different licence holder over the long term. Specifically, that document states:

> "Responsibility for some legacy liability facilities, e.g. passive operating waste management areas, will be transferred to the legacy liability management organization under an operating licence. As a consequence, the Decommissioning Facility Authority will have responsibility under both N286.6 and N286.5."

Greenpeace wishes to raise this issue

because at past hearings regarding AECL's decommissioning plan, it was apparent that intervenors were not being given the whole story on what was being planned behind closed doors between AECL, Natural Resources and the CNSC. Is it possible then that the federal government may someday propose to discharge AECL of its responsibility for waste at CRL?

This is an important question to ask because we're moving ahead potentially with a consultation led by AECL on how these wastes should be managed.

I would note again that in AECL's supplementary submissions, they seem to allude to this as well. They state on page 28:

> "The formal transfer of liabilities to the federal government is presently underway."

This sounds a lot like what I referred to earlier from the previous legacy strategy document. This is very relevant to these hearings, I believe. If decisions are being made about the long-term responsibility for the waste behind closed doors, this process is irrelevant and AECL's proposed communications plan to gather input, which is already unacceptable, is even more irrelevant. Why engage in a process when you're not being told everything and when the government, AECL

and CNSC staff are already planning changes that could nullify your input?

I would ask that the Commission ask AECL and Natural Resources Canada to clarify this.

In conclusion, I will summarize our recommendations. One, given the complexity of the site and ongoing leaks and transgressions on licensing, we recommend that the Commission reject the staff's recommendation for a five-year licence and give a two-year licence.

Second, AECL has yet to provide a comprehensive inventory of radioactive waste and ongoing contamination at Chalk River. Greenpeace believes that the Commission should reject CNSC staff's proposed five-year licence until we have a full inventory of these wastes.

Finally, because of the complexity of the Chalk River site, the fact that AECL has proposed a *de facto* radioactive waste management strategy for the site and that the federal government has yet to develop a policy framework to oversee the management of these wastes that is socially acceptable and transparent, we don't believe that an approval can be made for the decommissioning plan at this time and it should be referred back up to the federal government.

In closing, because I don't know if I'm going to be able to understand questions, I would note that I sent the petitions that Greenpeace sent to the Auditor General last month to CNSC staff this morning regarding our inquiries about the lack of regulatory oversight on non-fuel long-lived radioactive waste.

With that, I would like to thank the Commission. I apologize ahead of time if I am unable to take questions or hear your responses because of communication problems but, again, I appreciate this opportunity to intervene.

THE CHAIRPERSON: Thank you very much, Mr. Stensil, and the floor now is open to Commission members if they have some questions.

MR. STENSIL: I'm sorry, I can't understand anything.

THE CHAIRPERSON: Well, first of all, we thank you.

MR. STENSIL: I will have to read the transcript, I guess.

THE CHAIRPERSON: That's fine. The transcript will be available.

Dr. Barnes, do you have any questions?

MEMBER BARNES: Well, I'll just make a comment for the transcript that a lot of the -- I

appreciate the careful presentation, but many of the issues have been addressed before, which Mr. Stensil will not be aware of since he's not participating in these proceedings, but we have had a fair discussion on most of the points that he's made.

THE CHAIRPERSON: Dr. Dosman, do you have any questions?

MEMBER DOSMAN: Nothing further.

THE CHAIRPERSON: Thank you very much then.

And now we will proceed to the next oral presentation, which is a presentation from the National Research Council of Canada as outlined in CMD 06-H9.35, and I believe we have Dr. John Root, Director, who is here to make the presentation.

Dr. Root, the floor is yours.

06-H9.35
Oral presentation by the
National Research
Council of Canada

MR. ROOT: Thank you. Good afternoon, Mr. Chairman and Commissioners.

My name is John Root. I am the Director of the Canadian Neutron Beam Centre which is part of the National Research Council of Canada, NRC.

My directorate serves a community that is distributed across Canada and internationally. It's a community of scientists, professors, students and young professionals who need neutron beams to support their research on materials.

The National Research Council, of which I am a part, is Canada's leading science agency. It serves our national innovation system, which is a network of industries, government laboratories and universities spanning a full spectrum of science from discovery to innovation.

NRC supports the application for extension of the licence to operate Chalk River Laboratories. Commissioners already have our letter of support before them. Because NRC's neutron beam laboratory is located inside Chalk River Laboratories, we have a clear view of the role that Chalk River plays in Canada. It is a unique resource for Canadian science, engineering and industry. The value to Canada from Chalk River is delivered by the staff and facilities in areas that are important to all Canadians: energy, health, materials research and development.

NRC's presence at Chalk River is centred at the NRU reactor. Canada's largest and most productive science facility, the NRU research reactor is now

approaching the end of its life following 49 years of service.

NRC has engaged in the discussion of how the benefits from NRU can be continued and expanded in future years. If Canada is to invest in a facility to drive the next generation of neutron based science and technology such a facility will take time to design and build. An extension of NRU's operation would allow an orderly handover of activities minimizing any disruption to the productivity of the various scientific and industrial communities that need neutrons in Canada.

In anticipation of an eventual decision for a major science investment in a new Canadian neutron centre, our Neutron Beam Program has committed and sustained activities to build two new capabilities and expand the user community for science in domains of biophysics and nanotechnology.

Thirteen (13) universities led by the University of Western Ontario secured $2.5 million of funding from the Canada Foundation for Innovation to build a new neutron beam line at Chalk River. It is expected to be completed in January 2007 and integrated into the existing NRC operation at Chalk River. This facility will be accessible by universities and industries across Canada and abroad. It will generate new knowledge and help to

develop young, highly qualified people to make contributions in areas such as polymer coatings for medical implants, antibiotic resistance of bacteria, organic electronic devices, corrosion resistance of industrial materials and nanomagnetic memory devices for computers of the future. Wide ranging impacts indeed.

The continued operation of NRU and Chalk River Labs is essential to reap the benefits from this initiative and to maintain Canada's current ability to participate as leaders in a worldwide network of neutron beam facilities for advance materials research.

NRC's considerations of a future Canadian neutron centre are not limited to the aspect of neutron beam research that we manage directly. We think of all the ways Chalk River Laboratories contributes value to science, industry and the economic well being of Canada. We think of the potential for growth in coming decades, and we also think of the risk that Canada faces of a sudden loss of the abilities that NRU provides to Canada.

It is therefore reassuring to see all of the efforts and commitment by AECL to enable the continued safe operation of the Chalk River facilities over the requested licence period.

Thank you for the opportunity to address you in person and I would be happy to answer any

questions.

THE CHAIRPERSON: Thank you very much, Dr. Root.

The floor is now open. Dr. Barnes and Dr. Dosman.

MEMBER DOSMAN: Mr. Chairman, I would just like to ask Dr. Root how many scientists and employees do you have working on the facility within Chalk River?

DR. ROOT: My team is small. There are 22 employees, half of them scientists, and the rest technical staff and support staff. But our user community is 400 members organized by the Canadian Institute for Neutron Scattering, over 300 of which are Canadians.

MEMBER DOSMAN: And of those onsite, are they -- may I inquire, are they employees of NRC or employees of AECL?

DR. ROOT: All of my staff members are employees of NRC. I would like to point out that we have an agreement with AECL for operation at Chalk River. That makes us effectively as though we were a branch of AECL with regards to safety practices and procedures.

MEMBER DOSMAN: And that leads to my next question, Mr. Chair. How do people employed by NRC embrace training and quality assurance programs promoted by AECL?

DR. ROOT: NRC holds the same values for safety as a priority as does AECL, and we are obliged by contract to conform to all of the same regulations as any AECL employee. We receive the same safety bulletins that all employees receive. We are integrated into the computer network of AECL at Chalk River to ensure that nothing falls through the cracks.

MEMBER DOSMAN: May I inquire, who had ultimately accepted liability for employees employed by NRC on the site on your facility?

DR. ROOT: Well, NRC is the employer of those employees.

MEMBER DOSMAN: Thank you.

THE CHAIRPERSON: Just one question to Mr. Howden. Dr. Root spoke of a neutron beam under construction. I presume that’s licensed by CNSC and that would be licensed by a DO; is that correct?

MR. HOWDEN: Barclay Howden speaking.

The way we licence NRU is there is a facility authorization which outlines the operation limits and conditions, and within that, any of the systems, whether they be experimental systems or process systems, are covered under that, and as long as they conform to that there wouldn’t be a requirement for an amendment. However, if they did introduce a new safety concern that

required changes to safety systems or those operating limits and conditions, then the facility authorization would have to be revised and at some point an amendment of the licence done to capture that particular version of the facility authorization.

THE CHAIRPERSON: Okay. Thank you. Thank you -- oh, Dr. Dosman?

MEMBER DOSMAN: Mr. Chair, may I inquire of AECL, who is responsible for the financial guarantees and decommissioning plan of the NRC facility on the CRL site?

MR. McGEE: Brian McGee for the record.

The decommissioning responsibilities are part of the whole site plan and so it’s part of the NRU facility itself. The NRC facilities associated there, without getting into a lot of detail, there may be some components regardless of the reactor operation that they would want to remove, but they’re basically part of reactor infrastructure at the point of any issue from a decommissioning perspective.

MEMBER DOSMAN: So do I gather then, Mr. McGee, that AECL would assume full responsibility for decommissioning of the facility utilized by NRC?

MR. McGEE: Brian McGee for the record.

Yes, that’s the case.

MEMBER DOSMAN: Thank you.

THE CHAIRPERSON: Thank you very much then, Dr. Root.

Before we go to the next presentation -- we've been going for quite a while -- I think maybe we'll take a 10-minute break and then we will have Mr. Malkoske from MDS Nordion. So we'll take 10 minutes and come back at 3:25 p.m.

Thank you very much.

--- Upon recessing at 3:18 p.m.

--- Upon resuming at 3:32 p.m.

THE CHAIRPERSON: If everyone takes their seat, we'll start.

We will move to the next submission which is an oral submission from MDS Nordion as outlined in CMD 06-H9.5.

Mr. Malkoske, VP of Technology, is here to make the presentation. We already had a -- just for Mr. Malkoske's information -- we already had a presentation with a detailed submission from the Canadian Society of Nuclear Medicine earlier today that had a lot of similar slide presentation, but the floor is yours and you have the time to make your presentation and we welcome you, Mr. Malkoske.

06-H9.5

Oral presentation by

MDS Nordion

MR. MALKOSKE: Well, thank you, Mr. Chair, and Commissioners. It's a pleasure to be here this afternoon. My name is Grant Malkoske, Vice-President of Technology at MDS Nordion.

We're appearing before the Commission today to fully support the application by Atomic Energy of Canada Limited for the renewal of the Chalk River Laboratories site operating licence for the 63-month period to October 31st, 2011.

In doing so, what we would like to do is to emphasize the following three points. First of all, our support for the licensing work of the Commission and AECL in reviewing and approving the application while ensuring the safety of the public, the workers and the environment, and also while ensuring the ongoing quality and reliability of the facilities during their continued operation.

Secondly, the importance of a timely licence renewal to enable the continued operation of the Chalk River Laboratories and the NRU reactor, given the role that Canada has in assuring global medical supply, isotope supply.

Then thirdly, the importance of NRU and

related facilities for isotope production until the completion of the MAPLE facilities and transition of the isotope production stream from NRU to the MAPLE facilities.

We've come before the Commission in the past on a variety of occasions to portray the important role that Canada, through MDS Nordion and AECL, plays in supplying the world with medical isotopes, and some of that is what Dr. McEwan referred to in his presentation today. It's the view of Nordion, our customers and the nuclear medical community that Canada's supply is essential to the provision of health care for patients who are beneficiaries of medical isotopes globally.

Certainly the NRU reactor plays a vital role in producing medical isotopes for MDS Nordion. We then further process these products and ship them worldwide to our customers, the radiopharmaceutical manufacturing companies. These companies, in turn, undertake further processing of this material and distribute the final radiopharmaceutical products to many thousands of hospitals and clinics.

As an example of the importance of NRU, just within the past 12 months we experienced a situation that illustrated the vital role that NRU plays in isotope production to meet the global supply requirements. One of

the only two radiopharmaceutical manufacturers in the United States experienced a sterility assurance problem that shut down their technetium generator manufacturing line for a period from the middle of November 2005 to the beginning of April 2006.

The other manufacturer, relying on isotopes supplied by MDS Nordion from AECL's NRU reactor, ramped up production to meet the market requirements using products supplied by us and produced at NRU.

These isotopes produced at NRU were validated for use in our customers' generator manufacturing line, and to meet the global market needs, Nordion implemented backup supply production with other producers and made arrangements to supply product from these other producers to non-U.S. markets.

In parallel, the NRU reactor increased their production capacity in the order of 50 per cent to meet the U.S. market requirements. So in other words, the entire U.S. market was supplied from isotopes that were coming from the NRU reactor.

This valiant effort by AECL to quickly ramp up production demonstrated that all aspects of isotope production and processing at AECL's Chalk River site must be managed to a highly proficient degree. The regular and constant communication between MDS Nordion and AECL, the

rapid response by the AECL management team, the excellent performance by NRU and the NRU operations staff were instrumental in averting a global shortage of vital medical isotopes.

Furthermore, the NRU reactor is the world's primary producer of high specific activity Cobalt-60. Cobalt-60 is being used for cancer teletherapy applications in equipment supplied by Nordion to more than 80 countries world-wide. Every day more than 45,000 cancer treatments are performed using Cobalt-60 produced in the NRU reactor.

So what is the relative importance to Canada of this global supply chain which starts at the Chalk River Laboratories and Ottawa? Well, note the following points that provide an interesting perspective on what MDS Nordion and AECL do to supply product globally.

Our distribution to top export destinations reveals an interesting picture. This list, in fact, shows that many countries depend significantly on Canadian supplied isotopes. Certainly, Canada is a global leader in the production and distribution of medical isotopes.

For physicians and patients, Molybdenum-99 is the world's most important medical isotope. Eight out of ten nuclear medicine diagnostic procedures depend upon

this isotope.

It has particular significance in diagnosing cancer and heart conditions.

Other isotopes produced in the NRU reactor are iodine-131, used for a variety of treatment applications including thyroid cancer therapy and diagnostic imaging. Iodine-125 used for treating prostate cancer and Xenon-133, used for lung ventilation studies.

There are some 100 applications of medical isotopes scans used in today's medical procedures. More than 34,000 patient procedures are performed daily worldwide using medical isotopes supplied by MDS Nordion. Overall, some 60 countries rely on Canada for a substantial portion of their reactor-produced isotope needs. So this is a vital link that we play with NRU.

Moreover, our isotope supply and isotope technology continues to be the foundation for the discovery of new ways to diagnose and to treat disease. Radioisotope technology is being applied to develop new ways to target and to treat cancer. It is now possible to deliver the radiation right at the cellular level within the body, known as radioimmunotherapy. Monoclonal antibodies are used to carry the radioisotope to the cancer cell where radiation destroys the individual cell and largely spares healthy cells.

This treatment is offering new hope for conditions like non-Hodgkin’s lymphoma and inoperable liver cancer which have been approved by Health Canada for use here in Canada. MDS Nordion is a supplier of the medical isotope, Iodine-131, being used in this product and that product is produced at Chalk River.

Yes, Canadian enterprise has become an essential partner for biotechnology companies to develop their leading-edge treatments by radio labelling molecules.

Medical isotope innovation continues to unfold. Recently, the USFDA has unveiled their Critical Path Opportunities List to advance innovation in medical products as part of their Critical Path Initiative. The importance of bringing new drugs to market faster will have a direct application on the use of nuclear science to support public health needs. Molecular imaging is leading to new ways to develop drugs. This is the term used for an emerging set of drug development tools that are based on nuclear technologies and are anticipated to help bring drugs to market faster, more economically, and with a greater probability of success.

For example, at the developmental stage, it allows researchers to track the bio-distribution of a drug in animals and therefore to better translate the results

into humans. Molecular imaging can also be used at the clinical and commercial stages of drug development to identify which patients can benefit from a particular drug before they take it and then monitor how well it performs. This can be used for diagnosing or treating heart disease, cancer and neurological disorders.

MDS Nordion is positioning itself as a leader in this area because of our expertise in radiation technology and access to radioisotope supplies coming from Chalk River Laboratories.

Some recent examples of innovative developments include the development of Iodine-131 labelled antibody, for a severe form of brain disorder and an Iodine-131 labelled fatty acid for neural blastoma, an often fatal childhood disease. And in the third illustration here to the right you get an example of how Iodine-131 is applied to a brain tumour to eradicate it.

So then, if today for whatever reason, the Chalk River site and the NRU reactor were not available for isotope production, there would be a shortage in global supply of medical isotopes. All the other reactor producers of isotopes collectively in the world cannot fill the gap that would be created by the unavailability from NRU.

While Nordion does maintain supply

agreements to back-up, short-term isotope requirements from the handful of reactors in other countries that produce isotopes, these reactors collectively could not fill the gap.

So NRU certainly has played a key role in supplying medical isotopes to date, and it's been in operation, as we know, for some approaching now 50 years. We're pleased that AECL continues to invest in safety system upgrades, plant life extension programs and performance improvement initiatives for the NRU reactor. However, replacing isotope production in this aging reactor with production in the MAPLE facilities continues to be a priority for us in order to assure the global nuclear medicine community that Canada can continue to be a dependable supplier of medical isotopes for the world.

From radiopharmaceutical companies who are our customers, to nuclear medicine physicians, the health care system depends upon Canada to supply medical isotopes reliably, routinely and daily.

So then, in conclusion, the operation of the Chalk River site is vital to support Canada's role as an essential link in global medical isotope supply. The NRU reactor continues to play a key role in producing medical isotopes. At times, when NRU's operation is disrupted beyond what is planned, our customers have

temporarily been short of key products. This underscores the importance of an operating license renewal. This renewal will ensure NRU's place as a pre-eminent global producer of medical isotopes until such time as the MAPLE Facilities assume this role.

We expect that AECL as a licensed operator of the Chalk River site and the NRU reactor will operate these facilities with paramount consideration to safe and reliable production of medical isotopes. Safety, quality and reliability of operation will enable us to remain as a premier supplier of medical isotopes for the international health care community.

So, again then, we support AECL's request for the operation of a Chalk River Nuclear Laboratory site operating licence for the 63-month period to October 31st, 2011.

Thank you very much, Mr. Chair.

THE CHAIRPERSON: Thank you very much, Mr. Malkoske.

Questions; Dr. McDill.

MEMBER McDILL: Thank you.

You may have made reference to this, but earlier today AECL referred to shutting down the NRU for a planned outage and then keeping it down for a variety of reasons. What were you doing during that period of time?

MR. MALKOSKE: We were in contact with other producers to see what they could do to fill the gap. And again, for a temporary period of time, that is something that's manageable. So periods of time from four to seven days we can generally provide a work-around operation to supply isotopes, but after that we're into usually reducing supply to our customers.

MEMBER McDILL: Thank you.

THE CHAIRPERSON: Dr. Dosman.

MEMBER DOSMAN: Mr. Chair. Thank you, Mr. Malkoske.

Recognizing that this isn't a hearing on MAPLE, I'd like to ask you what your company will do if the NRU remains your sole source of isotopes for a longer period than anticipated and whether or not the pressure to meet demand could have any safety implications for the operation of the NRU?

MR. MALKOSKE: Again, not speculating on the completion of MAPLE or not, but certainly we expect NRU to be invested in by AECL for the safe and reliable operation. I think if there were a requirement for NRU to go beyond what we currently foresee as the operating request to the Commission, there would have to be discussions around whether alternate production capabilities could be ramped up. And that would, I think,

require a very significant investment outside of Canada. It's not clear to me that the existing reactors even have the capability to meet those demands. So it could result, I think, in certainly a dampening of the growth of nuclear medicine.

I'm not sure if that answers your question.

MEMBER DOSMAN: Well, thank you, Mr. Chair. I just wonder if I might put to AECL the same question essentially which is that, should NRU be required as the sole source of isotope production for longer than anticipated, does AECL have the capability of operating the NRU safely to meet the demand that's required?

MR. McGEE: Brian McGee for the record.

Yes, we do have the capability to continue operating NRU. And I'll renew the commitment I made before that if there's ever any evidence that we're not satisfied with our ability to operate it safely then we won't operate it. You know, both the presentations on nuclear medicine are compelling and both of them highlight the importance of what we do in this industry. And I look at that, not as a production pressure, not as a reason to compromise safety in anyway, but a reason to operate more safely to ensure that we're able to continue that source.

My experience and I think the industry experience is pretty clear that if you don't place that

focus on safe operation you're running the risk that you're going to get into something that's going to eliminate or prevent you from satisfying your mission to produce, in this case, isotopes more substantially than just a short delay or as Mr. Malkoske said like a seven day or an extension to a planned outage.

So that's really -- you know, I think the industry experience is clear on all that and that's one of the reasons why we're placing this focus on safe operation because we believe that it's how we ensure the ongoing long-term sustainable supply of isotopes and other aspects of our operation.

MEMBER DOSMAN: I'm just wondering if staff has any comment on this issue.

MR. HOWDEN: Barclay Howden speaking for the record.

All I can do is re-emphasize what I said earlier, Dr. Dosman, that in our opinion, NRU is operating safely today. However, I did describe three of the key issues, periodic inspection, overpressure protection and safety case, as things that are within the licensing strategy that need to be resolved over a time period and the licensing strategy is part of the -– is referenced in the licence -- so it's a legal requirement -- and that we have our enforcement toolbox available to us as required.

But, again, I'm expecting, as Mr. McGee has stated several times, that he will take the action in advance of us for protection of health and safety. But if not, we'll do it.

MEMBER DOSMAN: Thank you.

THE CHAIRPERSON: Dr. Barnes.

MEMBER BARNES: Just out of interest, and if it's proprietary, please don't answer. But on Image 5, you gave the histograms on market share, basically, in a number of regions of the world. Do you have any comment on your market share in places like China, India, Russia?

MR. MALKOSKE: China, India and Russia are really relatively small market shares for Nordion. I don't think we supply any product into Russia at all, it's pretty well all supplied by local reactors and China and India pretty well to the same amount.

So the major markets for us are the ones that are shown here.

MEMBER BARNES: Okay, thanks.

THE CHAIRPERSON: Thank you.

I guess the only comment I have is to CNSC staff. What you're saying is regardless of the world requirements and the need for cancer and other treatments, medical treatments, safety and the operation of the NRU is of the utmost importance and that has to be met regardless of what the market conditions are around the world.

You're saying those three conditions have to be met and you have the tools to make sure that they are met. Is that summing it up correctly?

MR. HOWDEN: Barclay Howden speaking.

Yes, that is correct. We have to work within the mandate that the NSCA gives to us.

THE CHAIRPERSON: Thank you very much.

And thank you very much, Mr. Malkoske, for coming today.

That concludes the oral presentations and we will move to a series of written submissions that have been grouped since they reflect similar comments or requests to the Commission. Mr. Leblanc our Secretary will read the list of these intervenors after which I will ask members if they have questions or issues arising from any of these letters.

Mr. Secretary.

MR. LEBLANC: Thank you, Mr. Chair.

The following interventions, which reflect similar comments, concerns or requests, have been submitted to the Commission as outlined in Commission Member Documents 06-H9.13 from Ducks Unlimited, Upper Ottawa Valley; H9.14 from the Ottawa Valley Tourist Association; H9.16 from the Renfrew County Catholic District School Board; H9.17 from the Corporation of the

Town of Laurentian Hills; H9.18 from the Town of Petawawa; H9.20 from John Yakabuski, MPP Renfrew Nipissing, Pembroke; H9.22 from the United Way/Centraide of the Upper Ottawa Valley Inc.; H9.23 from the Upper Ottawa Valley and Area Chamber of Commerce; H9.24 from the Municipality of Rapides des Joachims; H9.26 from the Deep River and District Hospital; 06-H9.27 de la municipalité de Chichester; 06-H9.28 de la municipalité de l'Isle-aux-Allumettes; H9.29 from the Canadian Forces Base/Area of Support Unit Petawawa; H9.31 from the Pembroke Regional Hospital; H9.32 from the Algonquin College in the Ottawa Valley; and H9.38 from the Ontario Association of Nuclear Medicine.

Written submissions from
Ducks Unlimited;
Ottawa Valley Tourist Association;
Renfrew County Catholic District School Board;
Corporation of the Town of Laurentian Hills;
Town of Petawawa;
John Yakabuski, M.P.P., Renfrew-Nipissing-Pembroke;
United Way / Centraide of the Upper Ottawa Valley Inc.;
Upper Ottawa Valley and Area Chamber of Commerce;
Municipality of Rapides des Joachims;
Deep River and District Hospital;

municipalité de Chichester;

municipalité de l'Isle-aux-Allumettes;

Canadian Forces Base/ Area Support Unit Petawawa;

Pembroke Regional Hospital;

Algonquin College in the Ottawa Valley;

Ontario Association of Nuclear Medicine

MR. LEBLANC: Mr. Chair.

THE CHAIRPERSON: Thank you to Commission Members. Are there any questions that the Commission Members may have regarding these written submissions?

If not, we will then move to the next written submission, which is from the Renfrew County School District Board, as outlined in CMD 06-H9.15.

06-H9.15

Written submission from the

Renfrew County

District School Board

THE CHAIRPERSON: Any questions?

If not, we will move to the next submission, which is a written submission from the Deep River District United Way, as outlined in CMD 06-H9.19.

06-H9.19

Written submission from the

Deep River District United Way

THE CHAIRPERSON: Any questions?

We will then move to the next submission, which is a written submission from the Canadian Nuclear Association, as outlined in 06-H9.21

06-H9.21
Written submission from the
Canadian Nuclear Association

THE CHAIRPERSON: If not, we will then move to the next written submission, which is a submission by the Deep River Science Academy, as outlined in CMD 06-H9.25

06-H9.25
Written submission from the
Deep River Science Academy

THE CHAIRPERSON: Any questions?

We will move to the next submission, which is a written submission by CANDU Owners Group Inc., as outlined in CMD 06-H9.30.

06-H9.30
Written submission from the
CANDU Owners Group Inc.

THE CHAIRPERSON: We will move then to the next submission, which is a written submission by Blair P. Bromley, Morgan Brown and Jeremy Whitlock, as outlined in CMD 06-H9.33.

06-H9.33
Written submission from
Blair P. Bromley, Morgan Brown and Jeremy Whitlock

THE CHAIRPERSON: If not, then we will move to the next submission, which is a written submission from the Society of Nuclear Medicine, as outlined in CMD 06-H9.34.

06-H9.34
Written submission from the
Society of Nuclear Medicine

THE CHAIRPERSON: We will move then to the next submission, which is a written submission from Patrick Hagarty, as outlined in CMD 06-H9.36.

06-H9.36
Written submission from
Patrick Hagarty

THE CHAIRPERSON: Any questions?

With respect to this matter, I propose that

the Commission confer with regards to the information that we have considered today and then determine if further information is needed or if the Commission is ready to proceed with a decision.

We will advise the public accordingly.

This brings to a close the public hearing of the Canadian Nuclear Safety Commission. I would like to thank all of those that were here today and also Hearing Day One for your attendance and your participation.

The Commission will start tomorrow its meeting at 8:30 a.m. This meeting is adjourned -- of the Commission is adjourned.

--- Upon adjourning at 3:58 p.m.