Canadian Nuclear Safety Commission

Commission canadienne de sûreté nucléaire

Public Hearings

Audiences publiques

April 26, 2006

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Le 26 avril 2006

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

Commission Members present

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

Commissaires présents

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

Secretary: Mr. Marc A. Leblanc

General Counsel : Jacques Lavoir

Secrétaire: M. Marc A. Leblanc

Conseiller général : Jacques Lavoie

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Ottawa, Ontario

--- Upon commencing on Wednesday, April 26, 2006
at 8:32 a.m.

Opening Remarks

M. LEBLANC: Bonjour mesdames et messieurs. Bienvenu à cette audience de la Commission canadienne de sûreté nucléaire. The Canadian Nuclear Safety Commission is about to start one public hearing. The public meeting of the Commission will follow later this afternoon.

Mon nom est Marc Leblanc. Je suis secrétaire de la Commission et j'aimerais aborder certains aspects touchant le déroulement de l'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 clearly before speaking. As a courtesy to others in the room, please silence your cell phones.

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

Mr. Chair.

THE CHAIRPERSON: Welcome to the public hearing of the Canadian Nuclear Safety Commission.

I am Alan Graham. President Keen, who is unfortunately unable to attend today, has assigned me to preside for this hearing.

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. Chris Barnes, and on my left, Dr. Jim Dosman.

In addition to Marc Leblanc, the Secretary of the Commission, Mr. Jacques Lavoie, General Counsel of the Commission, is with us also today on 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 one supplementary Commission Member Document, CMD, was added to the agenda after publication on March 29th, 2006 and solicited 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-H8.A.

Do I have concurrence?

For the record, the agenda is adopted.

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 a Day One Hearing 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 Day One of the public hearing. The notice of public hearing 2006-H04 was published on February 2nd, 2006.

April 19th was the deadline for filing of supplementary information. I note that supplementary information has been filed by AECL.

Commission Member Document 06-H9.A and 06-H9.1F are confidential and will be discussed in closed session if necessary after the public portion of the hearing.

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

I will turn to Mr. Van Adel, President and Chief Executive Officer. Good morning, Mr. Van Adel and welcome to the Commission.

06-H9.1 / 06-H9.1A to 06-H9.1G
Oral presentation by Atomic Energy Canada Limited

MR. VAN ADEL: Good morning, Mr. Chair and

Members of the Commission.

For the record, my name is Robert Van Adel and I'm President and Chief Executive Officer of AECL. With me today are Dr. David Torgerson, Senior Vice-President and Chief Technology Officer and Brian McGee, our Vice-President of the Nuclear Laboratories, as well as a number of members of 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 these facilities as essential. We recognize, however, 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 this obligation very seriously. Our Board of Directors also recognizes and fulfils its obligations to provide the resources to support safe operation of the site and to provide effective oversight.

We have increased funding levels at Chalk River to ensure that required resources can be attracted on a sustained basis and so that improvements to the infrastructure can be made.

Over the past year, for example, we

increased the staffing levels at Chalk River by more than 200 people. That's a net increase of approximately 12 per cent, and we are planning to add another approximately 150 new staff this year.

Over the past two years, we have increased the funding for chalk river by over 40 per cent, and that excludes any increases associated with the decommissioning liability. These actions will contribute to safe operation and environment stewardship.

Recently, Brian McGee has joined us to help increase the operational and safety focus at Chalk River. Brian has an outstanding track record in the nuclear industry and we are already seeing the benefits of his presence.

The renewal of the operating licence for Chalk River will enable us to continue to provide essential research and development support to the nuclear industry and the National Research Council and to continue to produce vital medical isotopes.

The work we do at Chalk River is unique and it is beneficial to society. We must continue this work, but we recognize that we will only be permitted to do so if we can demonstrate that we do it safely.

A third element of our work at Chalk River is to effectively manage Canada's nuclear legacy

liability. We have been before the Commission previously on this topic and I believe our plan for dealing with these liabilities is generally acceptable.

I am extremely pleased to inform the Commission that we have received assurances from the Government of Canada that funding will be forthcoming for the first five years of the plan and that the Minister will be making an announcement in the near future. This should give the Commission and members of the public confidence that our program has a stable funding base and will proceed as envisaged.

AECL is moving forward on a path to fully achieve international best practices in meeting our decommissioning of waste management obligations on AECL's managed sites. Our decommissioning plan clearly represents a sustainable and responsible solution to managing environmental issues without passing them on to future generations.

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 upholding 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, who

will discuss in more detail our performance and our plans for the proposed licence period. Thank you.

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

For the record, my name is Brian McGee and I'm the Vice-President of AECL's Nuclear Laboratories and I'm the site licence holder for the Chalk River Laboratories.

With me today are members of the AECL team, the Chalk River Leadership Team, in support of our application for the renewal of the Chalk River site licence.

My presentation today will cover two main areas. The first is our performance at Chalk River during the licence period. The second is the major activities we will undertake during the proposed licence period.

In our view, our past performance in the planned activities meets CNSC Guidelines in CMD 02-M12 and support the 63-month licence renewal we are seeking.

I want to reiterate to the Commission 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 site management team and our staff are committed to the safe operation of the site. As Mr. Van Adel stated, we have the full support of AECL's executive and the Board of Directors.

I would like to start by giving you my high level view of what we do at Chalk River. Let me break it into two parts. If you look at the slide, the box on the left represents our primary mission; to carry out research and development and to produce medical isotopes. We do this in a number of facilities that we operate for these purposes.

The box on the right represents primarily the legacy issues that have been developed over the past 60 years and that we must deal with today and into the future. These include safe storage facilities that have been shut down, waste material that was generated decades ago and stored at the site, management of wastes that are generated from current operation and external sources and the safe dismantling of facilities that are no longer needed.

The site is unique in that we are operating existing facilities, building new facilities and decommissioning other facilities all at the same time and in close proximity.

The programs shown at the bottom cover the

way that we carry out these activities to meet the challenges of this unique site. The programs are developed to meet modern-day standards. We are held, and rightly so, to today's standards in everything we do, including the dealing of the older waste facilities. This is particularly important with respect to the impact on the environment.

I want to mention that all of the activities shown on this slide are encompassed in our Public Consultation and Information Program, which is not specifically shown on this slide, because it covers everything we do and is a critical element of our operations.

I believe we meet modern-day standards in most of the activities represented in the box on the left and we are working towards exceeding these standards.

Our biggest challenge is to meet modern-day standards in the activities shown in the box on the right particularly in dealing with legacy waste. However, we have made great progress in dealing with these issues. We have tackled the most safety and environmentally significant aspects first, but there is still a great deal of work to do.

I will cover our accomplishments and plans throughout my presentation.

The size and scope of our operations at Chalk River is vast and time does not permit me to go into detail in all facets of our operation. Therefore, I will focus on the items shown on this slide as I believe they are the most important aspects of our performance during the present licence period.

This next slide shows the significant improvements we've made in reducing the frequency and severity of lost-time injuries to our workers. There has been a consistent, improving trend over the present licence period and we are taking steps to ensure this trend continues. This achievement is a joint effort of our staff, our unions and our management. There is a great cooperation in this area and a real willingness to ensure the safety of our workers.

This slide shows the trend in collective dose for workers at Chalk River Laboratories. There is a positive downward trend over the past 10 years, achieved through several means, including the implementation of formal ALARA practices, improved and more widespread radiation protection training, improved personal monitoring and the installation of new monitors in several facilities.

No employee received a dose in excess of CNSC limits during the present licence period. In fact,

no employee received a whole body dose in excess of 20 millisieverts compared to the limit of 50 millisieverts.

In 2004, there were three unplanned events resulting in exposures exceeding a dose-action level. In 2005, and so far in 2006, there have been no such events.

Overall, our Radiation Protection Program has been effective. However I believe we can do even better and I will talk about this more under our future planned activities.

Operational safety focuses on how well we operate our facilities and is at the heart of what we do. We have operated safely and made significant improvements in a number of areas during the current licence period. The first is that we have become much more engaged with the rest of the industry so that we can learn from others as we drive towards operational excellence.

We have brought in industry peers to review our operations and to identify areas for improvement and we are assisting -- we are visiting other licensees to learn from their operations first-hand.

Second, our Safety Culture Initiative has made great progress and will evolve to include a Human Performance Improvement Program aimed at reducing precursors and significant events. Such programs have proven to be effective elsewhere in the industry and we

will learn from that experience.

Third, our initial efforts toward operational excellence have focussed on NRU and we have made great progress and we will continue to do so. In fact, we recently updated the Commission on the NRU improvement initiative.

Fourth, we have recently expanded some of the improvement activities. For example, the morning management oversight teleconference now includes the Dedicated Isotope Facilities or DIF as we call them, and the Fuel Fabrication Facility. With time the scope of these improvements will spread to other facilities onsite as required.

Fifth, we've implemented formal maintenance plans in the facilities and they continue to evolve as we learn from experience and from exposure to industry best-practices. We are modifying the NRU Maintenance Program to address CNSC staff concerns.

Sixth, fire protection is an area where we have made excellent progress. We have significantly improved the safety of our facilities through the fire protection improvements we have made. The age and large number of facilities means it will take us some time to complete all the fire protection initiatives. Nevertheless, progress is visible and our staff is

rightfully proud of their achievements which have come about because everyone has recognized the importance of fire-safety and taken seriously the need to do better.

Finally, we've lowered the threshold for reporting unplanned events, both internally and to the CNSC and other regulatory agencies. This will help us identify trends or adverse conditions so we are able to take action to prevent more significant events and not just react to them when they happen.

All these activities are aimed at ensuring the continued safe performance of our facilities. CNSC staff's CMD points to weaknesses in our Quality Assurance Program and expresses concerns about the implications for safe operation.

I agree with CNSC staff's observations about our implementation of the QA Program and will address this when I discuss major activities planned for the proposed licence period. But I will preview it by saying we intend to move to an integrated performance assurance model of the type successfully used at the major utilities.

This slide shows radioactive releases to the environment as a percentage of the derived release limit. The main contributors are Argon-41 from NRU and releases from the Moly-99 production facility. All other

releases are a small fraction of the DRL.

CNSC staff's CMD discusses our Environmental Protection Program and identifies a number of areas for improvement. I want to emphasize to the Commission that we have a sound and comprehensive environmental management system in place and that we take our stewardship of the environment very seriously.

We have a comprehensive and systematic monitoring system in place to confirm that our releases are low and to identify any adverse trends and we take prompt action if such trends are observed. We take our own measurements and we have had independent measurements which confirm that the impact on the environment of operating the Chalk River Laboratories is low and well within regulatory limits.

We have many legacy issues which do not meet modern-day environmental standards and we have a risk-informed strategy in place to monitor and mitigate these issues. To touch on a few specific points, we have maintained our ISO 14001 registration up to date. In 2005, the Chalk River Laboratory site registration was successfully renewed to the 2004 version of the ISO 14001 standard.

We have recently had an independent survey performed by Laval University to measure radioactivity

levels in local samples of vegetation, water, air, milk and so on. The results are well below levels of significance and they are consistent with previous independent measurements by Laval and they are also consistent with our own surveys. This confirms that our operations are not having an adverse radiological impact on surrounding areas. We have included the Laval survey in our submission package to the Commission and it is posted on our external website.

Finally, we have implemented a new internal management system for managing and tracking the wealth of environmental data we collect. It will allow us to have a more reliable, single source of environmental data and will facilitate reporting of this information to the CNSC and to the public.

Turning to groundwater plumes, this is one of the legacy issues where we are spending considerable effort. This slide summarizes the mitigation measures that were taken during the present licence period or previously.

Regarding the plume down-gradient of the NRU Reactor, we have submitted to CNSC staff our action plan to further characterize and deal with this plume. This represents a continuation of activities that were previously under way and which we had been communicating

to CNSC staff to ensure they were continually kept up to date on the situation.

The current step in the plan is to find the leak or leaks in the bay. This isn't an easy task as the surface area is large and the leak-rate is very low on the order of half a litre per minute. Our calculations indicate that the tritium plume corresponds to about a factor of 20,000 below the monthly DRL for tritium. So the risk for the public and the environment is very low.

Nevertheless, we are continuing our efforts to address this plume.

Further, with respect to the general issue of mitigation of groundwater plumes, we have upgraded the waste treatment centre and, as a result, have discontinued discharges that were contributing to groundwater contamination.

We have installed treatment facilities to remediate the three most significant groundwater plumes, dramatically reducing the level of activity in these plumes. We have placed covers over parts of two waste management areas to reduce water infiltration. We have further drained Building 240, Tank 1, a leaking tank that was contributing to a groundwater plume, and we're actively investigating ways to remove the remaining sediment in the tank in a way that ensures the safety of

our staff.

We recently received CNSC approval to drain the NRX reactor bay, which will terminate another groundwater plume and we have a number of projects underway that will prevent new leaks or remediate existing ones.

Finally, we have an extensive network of groundwater monitoring to ensure that plumes are well characterized and that we can promptly detect any significant changes in the characteristics of a plume.

We have made improvements to the Public Information and Consultation Program and we'll make further significant improvements during the proposed license period. We have addressed the recommendations and Commission requests coming out of the 2003 Site Licence Renewal Hearing, and the NRU Environmental Assessment Hearing in 2005. We have strengthened the program in a number of areas with some examples shown on this slide.

Regarding decommissioning and the financial guarantee, we have submitted the key documents requested by the Commission. They have been reviewed by CNSC staff and been found to be acceptable. The five-year operational plan has also been submitted. It is a key document that describes in more detail the progress we will make in the first part of the overall decommissioning

program for the Chalk River site.

The updated Comprehensive Preliminary Decommissioning Plan, the CPDP, the public consultation framework, and the five-year plan have all been sent to community stakeholders and put on our external website. We have also progressed physical decommissioning.

Shown here is progress in decommissioning Building 107, one of the older laboratories on the site. If you use the tree as a reference point to see the extent of decommissioning from the picture on the left to the picture on the right.

This is a view of another part of the building. Use the water tower in the background as a reference point to see that the lab in the foreground on the left has been taken down. Of course, in this slide and the previous one, the after picture does not represent the final state. We are continuing with the decommissioning process and we'll take the building down to ground level and restore the site.

The decommissioning activities are being carried out safely with due regard to worker safety and protection of the environment. The material resulting from decommissioning is scanned to determine if it is radioactively contaminated. All such material is segregated and materials that are not radioactively

contaminated are recycled as much as possible.

On the subject of waste management, we have submitted to CNSC staff our 10-year waste management plan. This is a comprehensive strategy for dealing with waste arising from our operations, decommissioning activities and from external sources.

In response to a CNSC staff concern, we have completed and submitted a systematic assessment of our waste generation volumes and capacities.

We have demonstrated adequate storage capacity throughout the proposed license period and beyond.

The slide shows a long list of activities and projects in the waste management area that have been completed or are underway. I won’t go through each of them, but it gives you an idea of the scope and level of effort we’re applying in this area.

To summarize our performance during the current licence period, we believe that we fully meet CNSC requirements in most areas and where there are shortcomings, we have submitted action plans that we believe are acceptable to CNSC staff.

I believe that the proposed licence period -- during the proposed licensed period, we will be able to exceed CNSC requirements in a number of areas.

Having said that, I wish to stress that the operation during the current licence period has been safe with due regard to the environment, to security and to meeting Canada's international obligations. We have already made improvements in many areas, but in many ways, we are just beginning the journey.

This brings me to our major planned activities for the proposed licence period. I will touch on each of these topics, but our overall goal is simple. We intend to achieve world-class performance in developing and operating nuclear technologies simply with no compromise. One of the first things we are doing is realigning the organization to position us for achieving operational excellence. The boxes on the left represent our main business areas. The top two represent operation of our facilities. The third one is waste management and decommissioning and the bottom one represents our research and development organization.

The highlighted blue box in the left column represents the new organizational unit, Reactor Operations. It is lead by a General Manager who reports directly to me and who's sole focus will be on reactor operations and the related facilities. This change will result in an increased focus and management attention on reactor operations.

Another change is that we have moved the programs out of facility operation into their own organizational unit; again, reporting directly to me. This will allow us to continue to strengthen the programs and provide an improved level of management oversight.

The final item I want to mention on this slide is another new organizational unit called PINO or, Performance Improvement in Nuclear Oversight. The large utilities of such organization, whose role is to drive improvements throughout the organization in an integrated fashion and provide oversight that’s independent of line organizations and operations.

I have recently appointed heads to these units and I’ve asked them to develop change management plans. I want to move on with these changes, but we’ll only do so in a planned and safe manner. We have been keeping CNSC staff apprised of these changes and we will continue to do so.

This new organizational structure will help us to achieve further improvements in organizational safety culture, overall operational safety and performance excellence. We will continue to adopt and implement industry best practices across the site in a planned and controlled manner. We will expand our safety culture initiative and we will develop and implement a site-wide

human performance program.

So far we have met with the utilities to understand industry achievements in this area, and we have developed an outline of the program. This program is critical to reaching the next level of performance in our facilities. As I mentioned previously, we will move towards a type of performance assurance model that has been successfully implemented elsewhere in the industry. This will be spearheaded by the new PINO organization, and it will address the issues with our quality assurance program noted by CNSC staff in their CMD.

We will continue with our fire protection initiatives, and we will meet the commitments we have made to CNSC staff in this area. We will update our criticality safety program and criticality safety documents to demonstrate conformance to internationally accepted standards.

I should note that we have been practising criticality safety at Chalk River from the earliest days of the site and, in fact, have contributed significantly to the development of international criticality standards. We are in agreement with the CNSC staff on the merits of formally adopting these international standards.

We will continue to add resources to deal with our increasing workload. More than that, the

management team is committed to developing our staff and to developing new leaders to spearhead the organization into the future. We've already taken steps to strengthen leadership training, and we will accelerate these efforts.

Finally, we have a recognized need to improve our work management processes. This will allow us to make more efficient use of our resources and will ensure we tackle the highest priority items first. While this is a long list of focus areas, I believe the improvements across these areas are needed and they are achievable.

Our Radiation Protection Program meets CNSC requirements. However, I have personal experience in this area and have recently seen what's done elsewhere in the industry. I know we can take advantage of the lessons learned elsewhere and we can do even better. Therefore, during the proposed licence period, we will be benchmarking our Radiation Protection Program against industry best practices.

We will perform a gap analysis and then identify those areas for improvement and will make those improvements. We will keep CNSC staff apprised throughout this process. We will be making significant improvements in the area of public consultation and information. We have started the formation of what we're calling an

Environmental Stewardship Council, similar to community advisory committees that have been established elsewhere.

This council will ensure that we have effective two-way dialogue on topics of mutual interest with the public. We are expanding and putting forth more information on our public website, including reports on our safety and environmental performance; the most recent of these being the independent Laval study. We will also be regularly issuing an updated community newsletter.

We have been having consultation on specific projects as they progress through their start-up stages. Finally, we are increasing our resources in this area to ensure that we can effectively support and sustain these improvements.

Continued operation of NRU is of critical importance to meet the research and development needs and to produce medical isotopes.

We met the licence condition to demonstrate the seven safety system upgrades that were fully operational by December 31st, 2005. CNSC staff conducted an inspection of two of the upgraded systems in February of this year. At the inspection exit meeting CNSC staff identified a number of significant issues.

Immediately following this exit meeting I initiated an internal review to determine if it was safe

to continue to operate NRU in light of these findings and to identify and to implement any necessary compensatory actions. We extended our assessment to the other five upgrade systems to ensure that we were being comprehensive. We are undertaking other actions to identify and correct any underlying systemic issues.

Our objective is two-fold. First, to ensure that the continued operation of NRU is safe, and second, to rectify the identified deficiencies in the upgrades documentation and to ensure that our processes are fixed, such that a repeat will not occur.

We will only operate NRU if I am satisfied it is safe, and I want to assure the Commission that I spend a lot of my time providing direct oversight of NRU operations. I continue to be satisfied that it is safe to operate NRU and that its operation will continue to be safe.

CNSC staff CMD also identifies a number of items related to the longer term continued operation of NRU that need to be resolved according to different timelines. We are committed to meeting the acceptance criteria identified in the CNSC staff licensing plan for NRU. We have made several recent submissions and we held meetings with CNSC staff to address and resolve issues and we believe good progress has been made.

Regarding the Environmental Protection Program, CNSC staff has proposed a number of new license conditions in this area. Many of them are consistent with activities already included in our environmental plan. We'll have further discussions with CNSC staff on the remaining items prior to day two.

Specifically, with respect to the NRU ground water plume, as I mentioned previously, we have provided the information requested by CNSC staff regarding our action plan to deal with this plume and this plan is actively being pursued by AECL staff.

As part of this plan we have progressed our scanning of the bay surface area in an attempt to locate the leak. To date we have not identified any leak but our systematic search continues.

The topic of storm water management was discussed at a recent environmental assessment hearing on the liquid waste transfer and storage project. We have recently performed a gap analysis between current Ontario Ministry of Environment Standards and Chalk River Laboratories Practices and Procedures regarding storm water management and we've shared those results with CNSC staff.

In general, we meet the Ministry of Environment Standard but there are some specific areas

where we intend to make improvements and by December 2006 we'll have in place a plan to do so.

We are beginning the first year of the Chalk River Laboratories Decommissioning Program. It is based on an optimized approach where we will accelerate decommissioning, subject to public consultation and input. Initially we will be building enabling facilities and the plan will be updated regularly as we make progress and confirm the planning assumptions.

A key element of the plan is that it is structured to facilitate monitoring, both internally and by CNSC staff, and to facilitate open reporting to community stakeholders.

The plan also makes clear some important strategic elements, such as our strategy for managing the material generated by the decommissioning process. This strategy will be reviewed and updated as necessary based on our experience and consultation with the public.

The major elements of the early years of the program are shown here. The public consultation program is an important aspect of the program not only in the early years but throughout the program.

The major enabling facilities are shown on this slide, as are Chalk River Laboratory facilities that are included in the first five years of the plan.

A major planned activity for the proposed licence period is that the dedicated isotopes facilities, or DIF, will become operational. We intend to move DIF operations into the nuclear laboratories reporting to the general manager of reactor operations. This is a very positive move that will help us align our operational practices and achieve consistency and safe operation across the site.

As a result of DIF producing isotopes NRU production will be focused on research and development and production of long-lived isotopes.

There will be an accompanying shift in focus in the nuclear fuel fabrication facility and the Moly-99 production facility will cease isotope production.

Waste management area G will begin receiving waste from the new processing facility and accordingly will stop putting high-level isotope waste into tile holes and into the FISST tank.

Before I conclude, Mr. Chair, I would like to briefly mention the new conditions in the proposed licence. We appreciate that many of the new conditions will provide both increased transparency in our operations and increased assurance that our operations meet internationally accepted standards. We are comfortable with some of the new conditions and we previously

discussed some of them with the CNSC staff.

We are evaluating the impact of the proposed new conditions and we'll have further dialogue with CNSC staff prior to the Day Two hearing.

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

We have met CNSC requirements in most areas and where there are outstanding issues we have submitted action plans that we believe are acceptable 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 that we meet CNSC guidelines for the licence period for which we have applied.

Finally, I want to reinforce the commitment I have made to you on previous occasions. 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 us to overall operational excellence. To achieve this level of

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

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

THE CHAIRPERSON: Thank you, Mr. Van Adel and Mr. McGee, for your presentation.

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

06-H9
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. Greg Lamarre, Director, and Mr. Lawrence Colligan, single point of contact for the Chalk River Laboratories Compliance and Licensing Division and the rest of the members of the licensing team for this facility.

CNSC staff has prepared a recommendation based on the review of Atomic Energy of Canada Ltd's application to renew the Chalk River Laboratories Nuclear Research and Test Establishment operating license that will expire on July 31st, 2006.

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

MR. COLLIGAN: Thank you, Mr. Howden.

Good morning, Mr. Chair, Members of the Commission. For the record, my name is Lawrence Colligan, single point of contact for 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. The position includes a recommendation that the Commission approve the issuance of a proposed 63-month licence to operate the CRL site.

To outline our presentation I will first provide an overview of the site followed by a discussion of CNSC staff's review of AECL's license renewal application. I will then highlight the licensee's performance in various safety areas, along with other licensing matters since the last license was issued.

The applicability of the *Canadian*

Environmental Assessment Act to this renewal will be discussed, along with AECL's compliance with the CNSC cost recovery fees.

Finally, to end our presentation, CNSC staff will present the changes it proposes to the draft licence, along with its conclusions and recommendations for licence renewal.

CRL is located in Renfrew County on the south shore of the Ottawa River, 160 kilometres northwest of Ottawa. The CRL site is one of the most complex nuclear facilities in Canada.

The CRL site consists of a supervised area delineated by the site boundaries shown on the map. The supervised area includes a more confined built-up area located close to the river that contains the majority of buildings and facilities on site. The site boundaries are located between Highway 17 and the Ottawa River.

The built-up area is shown in grey on the river shore. Outside the built-up area there are several waste management areas for handling both nuclear and non-nuclear wastes. These are outlined in dark green in the centre of the slide.

Close to 2,000 people work on the site conducting a wide range of nuclear and non-nuclear experimental and support activities. Access to the site

is limited to CRL employees and approved visitors.

Looking at the built-up area, some 160 main buildings occupy an area of about 40 hectares. The built-up area consists of two controlled areas, controlled area 1 and controlled area 2, located next to each other. Controlled area 2 is a high security area shown in pink on this slide. It contains all major nuclear facilities except for the waste management areas. Controlled area 1 shown in yellow above contains the remaining accelerators, laboratories, support facilities and offices.

It should be noted that the waste management areas operate under the same restrictions as buildings in controlled area 2.

AECL's nuclear research and test establishment operating licence for CRL expires on July 31st, 2006. AECL has applied to have the operating licence renewed for a period of 63 months. The request for a three-month longer than the typical five-year licence period would shift the expiry date to October 31st, 2011.

This three-month shift would allow for the submittal and CNSC staff review of annual and facility reports for the year in question and the possibility of reporting to the Commission in a timely fashion in the future.

CNSC staff also intends to bring the Commission up-to-date on the status of CRL in a midterm report. CNSC staff therefore agrees with AECL's request that the licence expiry date be shifted to the end of October from the present end of July.

In its application for renewal of the licence, AECL submitted two supporting documents. The first document is entitled "Licensing Package". Documentation in support of site licence renewal for CRL is intended as a replacement for the previous licensing document RC693-CRL. The licensing package document refers to AECL's program documentation.

The second document is entitled "Licensing Basis Document for CRL". This document provides a clause-by-clause statement for relevant excerpts from the NSCA regulations in support of the licence application. CNSC staff's review of the application concludes that it meets requirements.

CNSC staff reviewed AECL's past performance in the following seven safety areas: performance assurance, operating performance, emergency preparedness, security and robustness, radiation protection, environmental protection, and safeguards and non-proliferation. Each of the seven safety areas will be briefly outlined in the following nine slides.

The safety area of performance assurance covers those activities that enable effective human and organizational performance through the development and implementation of management programs, standards, processes and procedures. Specifically, CNSC staff reviewed the licensee's quality management, event reporting requirements and operating experience and training programs.

For the safety area of performance assurance, CNSC staff rated the overall Performance Assurance Program and its implementation as below requirements mainly because of the present state of the Quality Management Program. AECL's QA Program consists of a Corporate QA Program that calls upon lower tier individual QA Programs to direct the design, procurement, construction and commissioning activities where the detailed processes are defined.

For an operating facility, the operation's QA Program is the cornerstone to controlling all activities in the facility. The operation's QA Program contains elements of the designed procurement, construction and commissioning processes and simply relies on the subprograms for the related activities.

AECL's Corporate QA Program is compliant with the high level CSA N286.0 standard. CNSC staff also

requires that the operation's QA Program be in compliance with the N286.5, the designed QA Program in compliance with N286.2, the Procurement Program be in compliance with N286.1, and so forth with all the N286 series of standards.

In 2002, CNSC staff conducted a site-wide audit of the operation's QA Program and found a number of deficiencies. AECL has since addressed the deficiencies identified during the audit. Some of the unplanned events that occurred at both NRU and the NFFF Facility indicates there are weaknesses in the operation's Quality Assurance Program.

In 2006, CNSC staff carried out an audit of two of the seven NRU upgrades. Deficiencies in the outputs from the design, procurement, construction and commissioning were also found for the two audited upgrades. CNSC staff therefore concluded the overall QA Program did not yet meet CNSC staff's expectation for the facility.

In the CMD, the QA Program was rated "C" for both the program and its implementation because of the weaknesses found in the design, procurement, construction and commissioning QA Programs. Although the rating is similar to that for previous assessments of the safety area, CNSC staff considers that progress has been made in

both training and quality management.

In reviewing AECL's operating performance over the last licence period, CNSC staff reviewed the following aspects.

For conduct of operations, CNSC staff carried out field compliance inspections of the various CRL facilities listed in Appendices "B" and "C" of the proposed licence. These inspections revealed no significant non-compliance items. For those actions and recommendations that the inspections raised, AECL addressed them in a satisfactory and timely manner.

CNSC staff concludes that AECL has operated its facilities within their defined safety envelopes as documented in the respective facility authorizations.

For reportable events, CNSC staff provided follow-up information on a reportable extremity dose event that took place in the NFFF Facility and that was brought before the Commission previously. Reportable events for the NRU reactor are discussed in Appendix "C" to the CMD.

Routine operation of most site facilities has remained unchanged. Authorization was given in June 2004 to increase slightly by about 4 per cent the limit on uranium concentration in the FISST tank, but AECL has not made any fissile material addition to the FISST tank since May 2003 and is keeping the margin resulting from the

increased concentration limit for contingencies.

A temporary increase in the Moly-99 production began in December 2005. This affects the NRU Reactor, the Moly production facility and the waste management facility.

For conventional health and safety, the overall accident frequency and severity rates at CRL are below industry average. In addition, CNSC staff considers that the diminishing accident frequency and severity rates, as shown in CMDs 06-H9, are a good indication that AECL's Occupational Safety and Health Program is effective.

Considering fire protection. Based upon AECL's performance in developing a fire protection program and implementing effective corrective actions over the existing licence period, CNSC staff considers that the licensee meets expectations with respect to the program and its implementation.

And looking at pressure boundary compliance, in general, CNSC staff considers the application and implementation of pressure boundary codes and standards are CRL to be acceptable.

There remain, however, three outstanding pressure boundary compliance shortfalls pertaining solely to NRU that are highlighted in Appendix E of CMD 06-H9.

CNSC staff expects licensees to have a consolidated emergency plan and an emergency preparedness program to be able to respond effectively to emergencies.

CNSC staff has assessed the Emergency Preparedness Program at Chalk River Laboratories and found it to be acceptable.

No new evaluation has been carried out since November 2002. However, CNSC staff has not found any evidence suggesting any degradation of emergency preparedness program or weaknesses in its implementation to justify changing the rating from the previous licence period.

CNSC staff is scheduling a site visit during 2006 to bring its information up to date on the CRL Emergency Preparedness Program and to ensure that the program continues to meet requirements.

While CNSC staff is actively overseeing the physical protection program, the Commission has decided that the related inspection and assessment information will not be publicly available to ensure that national security interest is not compromised.

Security and robustness are covered in more detail in supplementary CMD 06-H9.A, which is a classified document.

CNSC staff's review of worker dose data for

the period of 2001 to 2005 shows that the radiation doses are being adequately controlled. No CRL worker received an effective dose in excess of the regulatory limits as indicated in the table.

Given that there are approximately 2,000 workers on the CRL site, CNSC staff considers the variation of some 20 workers or so in the 10 to 20 millisievert whole body dose range over the five years not to be statistically significant.

All employees at CRL wear thermal luminescent dosimeters, TLDs, to measure whole body dose and skin doses they receive. In addition, personnel who may be exposed to neutrons are provided with additional neutron dosimeters. Extremity dosimeters are also used as required to measure doses to the tissues of the hands, forearms, feet and ankles. To analyze all occupational dose data, AECL operates a CNSC licence Dosimetry service.

During the present licence term, AECL has developed, documented and implemented a corporate ALARA program at CRL. The ALARA program document was accepted by CNSC staff in October 2005.

All accidents related to radiation protection from the comprehensive audit of CRL in 2002 have been closed.

CNSC staff is satisfied that AECL’s

Radiation Protection Program meets regulatory requirements.

Environmental performance comprises the programs to identify, control and monitor all releases of nuclear and hazardous substances. The major areas of interest include radioactive and conventional waste management, effluent and environmental monitoring, emission data, planned releases, assessment of environmental protection systems and compliance with environmental regulations.

CNSC staff initiated a review of the environmental protection standards being applied at CRL and completed a number of site inspections. This review was done at the request of the Commission at the meeting held on April 6, 2005.

The CRL licence and facility authorizations were compared with licences from other Class 1 nuclear facilities. As a result, CNSC staff identified the need for environmental conditions to be added to the CRL site licence as proposed in the CMD.

CNSC staff concluded that the Environmental Protection Program at CRL meets requirements, but its implementation, although well established, is not yet complete.

CNSC staff looked at airborne and liquid

radiological releases at CRL and concluded that the controlled releases to the environment resulting from the operation meet CNSC requirements.

CRL airborne releases are below the site-derived release limit. However, argon-41 from the NRU reactor accounts for 90 per cent of the site releases and contributes to the majority of the dose received by the critical groups.

The NSCA Radiation Protection Regulations, subsection 4(b) requires that a licensee to ascertain the quantity and concentration of any nuclear substance released as a result of a licensed activity.

Given that argon-41 is a substantial ongoing release, CNSC staff proposes the addition of a licence condition to require AECL to install a real-time sampling and monitoring system.

The controlled liquid releases from CRL are all into the Ottawa River. The largest contributor to the radionuclide discharge is the process sewer. It accounts for 83 per cent of the total controlled release.

However, there exists a number of uncontrolled releases at CRL resulting in plumes. Some examples are shown here in the NRX reactor bay, the NRU area, Tank 240-1 and some releases from the waste management areas.

There should be no uncontrolled releases from the site. Once such a release has been detected, the expectation is that the licensee establish a mitigation plan. CNSC staff considers the management of uncontrolled releases at CRL not being well established presently.

The magnitude of the uncontrolled releases to the environment may be greater than the controlled releases. CNSC staff therefore requested that controlled and uncontrolled releases be reported separately to be able to quantify the size of the uncontrolled releases.

All releases from the site contribute to the radiation dose received by the local population. Based on the preliminary release data received from AECL, CNSC staff is of the opinion that the 2005 dose data will be similar to 2004 and fall far below the regulatory limit of one millisievert for a member of the public.

The largest non-radiological gaseous emission from CRL site are related to fuel combustion for building heating and steam generation purposes and inadvertent losses of halocarbons used in research, cooling and fire suppression applications.

The results of the CRL program demonstrate that adequate controls for the release of potentially hazardous substances are in place.

CNSC staff concludes that the program will

continue to provide reasonable protection to the environment.

AECL's Ecological Effects Review document of 2005 identifies sources of radioactive and hazardous substances at the site. The EER also characterizes the releases of radioactive and hazardous substances to the environment, identifies the remediation measure in place and describes the potential effects on the environment.

Overall, it was concluded that the uncontrolled contaminant releases at CRL site are not harmful to the environment.

Finally, CNSC staff expects AECL to have an environmental monitoring program that is comprehensive for the whole CRL site. An environmental monitoring program is an integrated and documented set of activities that sample and measure and analyze radiological and hazardous substances and physical and biological parameters.

CNSC staff is proposing a licence condition requiring AECL to implement a program that is appropriate to the nature and scale of the licence activity that includes a groundwater monitoring program.

Canada is a signatory to the Treaty of Non-Proliferation of Nuclear Weapons. Pursuant to that treaty, Canada entered into a Safeguards Agreement with the International Atomic Energy Agency in 1972 and into an

additional protocol to that agreement in the year 2000.

Under the additional protocol, the IAEA has the right to request complementary access to designated locations to assure consistency with Canada's declared nuclear fuel activities.

Seven complementary accesses were carried out at CRL during the review period. AECL's procedures and preparations for accommodating the IAEA activities were acceptable in providing prompt access to their inspectors.

Safeguards provide the measures required to implement the international obligations to which Canada has agreed. CRL is subject to the safeguards requirements set out in condition 7.1 to 7.15 of the current site operating license. CRL maintains nuclear material inventory systems to demonstrate compliance with the safeguard requirements.

During the review period, CNSC staff, along with the IAEA, conducted four physical inventory verifications at Chalk River. In addition, the IAEA has performed monthly inspections of un-irradiated, highly enriched uranium and plutonium and quarterly inspections of all irradiated fuel.

In accordance with the license condition, AECL provided all reports and information necessary for

safeguards, and fully complied with the IAEA and CNSC requests during the review period. CNSC staff concludes that the implementation of safeguards at CRL is acceptable.

I now wish to address a number of additional matters relevant to the renewal of the license: Waste management, financial guarantees and the comprehensive preliminary decommissioning plan, the CPDP, criticality safety, Public Information Program, the CNSC site office, and NRU reactor. Each of these matters will be briefly outlined in the following six slides.

Solid radioactive waste produced at CRL from operational and decommissioning activities and from off-site organizations is currently placed in interim storage at waste management areas B and H. The radioactive liquid waste is collected and transferred to the waste treatment centre where it is processed prior to the release to the process sewer.

Waste management area C continues to receive packaged, de-watered sewage sludge and animal carcasses. The current production rate of solid radioactive waste at the CRL site continues to increase. Initiatives are underway by AECL to address the waste management issues.

First, the construction and operation of

additional tile holes at waste management area B would provide additional storage capacity until approximately the year 2010. CNSC staff is concerned that there are no identified contingencies beyond the year 2010 for the continued safe storage of solid radioactive waste and requested AECL to address this concern.

Second, the construction and operation of the proposed shielded modular above-ground storage structures at waste management area H, would provide storage capacity for approximately 20 years. All liquid radioactive waste produced at the CRL site is currently treated at the waste treatment centre prior to the release to the process sewer. With the addition of newly commissioned storage tanks, the centre can adequately manage all the radioactive liquid waste at CRL.

Waste management area C is currently closed, except for the reception of de-watered sewage sludge and animal carcasses. The de-watered sewage sludge is stored in marine-type containers. These containers will be removed and the contents disposed in the new sewage sludge repository as discussed in the CMD.

The licensee has been informed that the practice of disposing of animal carcasses in this area must be discontinued by July 31st, 2006.

The Comprehensive Preliminary

Decommissioning Plan, the CPDP, presents the strategy, scope, planning assumptions and schedule as they apply to the decommissioning of the Chalk River facilities. CNSC staff has reviewed the CPDP and concluded that it is consistent with regulatory guide G-219. AECL's document entitled "Basis for the Cost Estimate for the CRL Decommissioning Liability" presents a basis of cost for the CRL portion of the legacy liability. The document includes the scope, costs and schedule for the site constituents of the liability.

The five-year operational implementation plan comprises two major components. First, a set of planning assumptions and strategic elements that underlie the five-year plan. And, second, an implementation plan which includes a detailed Gantt Chart showing the nature, timing and duration of the activities that will be executed in the five-year period.

CNSC staff has also reviewed AECL's communication and public consultation plan on the CPDP for CRL and found it to be acceptable. CNSC staff considers that together, the CPDP, the basis for the cost estimate and the five-year operational implementation plan form a sound technical and financial basis for the eventual decommissioning of the CRL site.

Given the acceptability of the above

documents and the communication and public consultation plan, CNSC staff recommends that the financial guarantee for Chalk River Laboratories be accepted by the Commission.

At CRL, AECL operates a number of nuclear facilities where it is of the utmost importance to ensure criticality safety at all times during operation. AECL has developed, documented, and put in effect a criticality safety approach for each of its nuclear facilities. This approach entails setting out in a document called a "Criticality Safety Document" for each facility; the operational storage, control and maintenance conditions to be followed for criticality safety.

CNSC staff is of the opinion that, prior to undertaking the updating of the CSDs, AECL should first develop a generic Nuclear Criticality Safety Program document in accordance with the internationally accepted NC8 series of standards. The CSDs are living documents and can be changed by ACL without prior CNSC approval.

The Nuclear Criticality Safety Program, however, would contain only information requiring CNSC approval. The Nuclear Criticality Safety Program could then be customized for a facility-specific safety requirements. In CNSC staff's view, this would lead to a consistent gradual implementation of the nuclear

criticality requirements at all facilities.

During the updating period, there would be a co-existence of facilities that are licensed to different sets of criticality safety requirements. This would be resolved over time as more CSDs are updated. The list of initial facility CSDs to update include the higher risk facilities such as the nuclear fuel fabrication facilities, the NFFF, NRU, the Moly-99 production facility, and facilities for storage of category 1, 2 and 3 nuclear material.

CNSC staff reviewed AECL's Public Information Program dated March 20th, 2006, taking into consideration draft regulatory guide G-217. Overall, CNSC staff concludes that the Public Information Program submitted by AECL for the renewal of the site operating license is acceptable. However, CNSC staff also considers that AECL should improve the provision of information on its environmental health and safety performance to stakeholders.

AECL has an active process underway to provide environmental data on the website, but CNSC staff considers that the progress has been less timely than originally anticipated.

CNSC staff formally communicated to AECL in July 2005 its intention to establish a CNSC office at

Chalk River. Subsequently, AECL offered a suitable space and infrastructure support for the site office. CNSC site office is presently under construction in Building 432 on the CRL site. The site office is scheduled to officially open in May 2006.

The hiring of new CNSC site office staff is largely complete. CNSC staff expects to have the site office completely staffed by June 2006. CNSC staff is satisfied that, with the CRL site office in place, staff will ensure an enhanced level of regulatory oversight in response to ongoing activities at the site.

The NRU reactor's operating performance was detailed in CMD 05-H28, submitted to the Commission for its seven-month operating licence extension. An update on recent reportable events in the facility and routine operation matters is outlined in Appendix C.

Details on certain elements of the NRU Improvement Initiatives Program Plan, the IIPP, were presented in February to the Commission in CMD 06-M6. An update is presented in Appendix D to this CMD.

At the Commission hearing of October 18, 2005, the Commission members observed that the safety and licensing plan for the continued operation of the NRU reactor involved many actions for which the overall status, priority and risk significance of each was not

fully apparent.

As a result, CNSC staff developed a detailed licensing strategy for monitoring the actions required for the continued operation of the NRU reactor.

The strategy was communicated to AECL in a letter dated February 28th, 2006. The strategy, which outlines key short, medium and long-term prerequisites to be met for NRU reactor operation beyond July 2006 is presented in Appendix E.

CNSC staff concludes that contingent upon AECL's adherence to the conditions as detailed in the licensing strategy and outlined in Appendices C, D and E, the risk posed by the continued operation of the NRU reactor is acceptable.

The application to renew the CRL operating licence falls under subsection 24(2) of the *Nuclear Safety and Control Act*. Subsection 24(2) of the NSCA with respect to the renewal of the licence is not prescribed for the purposes of paragraph 5.1(d) of the *Canadian Environmental Assessment Act* and the Law List Regulation. There are no other CEAA triggers for this project that involve the CNSC.

Therefore, an environmental assessment under CEAA is not requirement for the renewal of the CRL operating licence.

AECL is currently in compliance with CNSC's cost recovery fees regulation.

CNSC staff concludes that AECL's application for an operating licence meets the requirements for the *Nuclear Safety and Control Act* and its pursuant Regulations.

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

Third, AECL is qualified to carry on the activities that the licence will authorize.

Fourth, AECL has made and will continue to make adequate provisions for the protection of the environment, the 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 the requirements and will continue to meet requirements during the term of the proposed operating licence.

Sixth, AECL has submitted adequate documentation in support of the proposed continued operation of CRL.

Seven, AECL is currently in compliance with CNSC cost recovery fees regulations.

Eight, the Comprehensive Preliminary Decommissioning Plan, the basis for the cost estimate, the Five-Year Operational Implementation Plan, together form a sound basis for the eventual decommissioning of the Chalk River Laboratories site. In addition, the communication and public consultation Plan on the CPDP is acceptable.

Finally, CNSC staff concludes that the financial guarantee proposed by AECL for the decommissioning of the CRL site is acceptable.

The proposed licence attached to CMD 06-H9 is similar to the current licence. The proposed changes to the licence are outlined in Appendix F. To bring it in line with other current CNSC licences for Class 1 facilities and to address current environmental issues at CRL, a number of additional conditions have been proposed for NRU staffing, organization and operation, environmental protection, reporting requirements, fire protection, quality assurance, criticality safety, decommissioning financial guarantee and waste management.

Other modifications to the licence were required to effect minor editorial changes and to update the information.

CNSC staff recommends that the Commission

accepts CNSC staff's conclusion that the requirements of CEAA were previously fulfilled and that an environmental assessment under CEAA is not required.

Second, the Comprehensive Preliminary Decommissioning Plan, the basis for the cost estimate and the Five-Year Operational Implementation Plan form a sound basis for the eventual decommissioning of the CRL site.

Third, the financial guarantee proposed by AECL for the decommissioning of CRL site is acceptable.

Fourth, the proposed conditions outlined in Appendix F be added to the operating licence for the CRL site and that AECL is qualified to carry on the activities that the licence will authorize and that AECL has made and will continue to make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.

Finally, CNSC staff recommends that the Commission approve the issuance of the proposed nuclear research and test establishment operating licence valid for a period of 63 months from August 1st, 2006 until October 31st, 2011.

In summary, I've given an overview of the site which was followed by CNSC staff's review of AECL's

licence renewal application. I then highlighted the licensee's performance in various safety areas and outlined the relevant licensing issues during the last licence period.

The applicability of the *Canadian Environmental Assessment Act* to this renewal was discussed, along with AECL's compliance with CNSC's cost recovery fees.

My presentation ended with a brief overview of the proposed changes to the draft operating licence along with CNSC staff's conclusions and recommendations for licence renewal.

This completes my presentation. I will now hand over the floor to Mr. Howden.

MR. HOWDEN: Thank you very much.

Mr. Chair, that concludes CNSC staff's presentation and we are available to respond to questions.

THE CHAIRPERSON: Thank you very much.

I guess before we open the floor to questions from Commission members, perhaps we should take a five or six-minute break. So we'll take a six-minute break and be back at 9:55.

--- Upon recessing at 9:49 a.m.

--- Upon resuming at 10:00 a.m.

THE CHAIRPERSON: Okay. I will now open

the floor for questions from Commission members to CNSC staff and Atomic Energy of Canada Limited.

Given the breadth of this application, I suggest to split the question period into the following four themes: one, operating performance and performance assurance, including NRU; two, environmental protection; three, other items, including comprehensive Preliminary Decommissioning Plan, conventional Health and Safety and Public Information Programs, also radiation protection and licensing period. That would be in theme three. Theme four would be NRU-related matters not already covered earlier.

Whereas this is to focus on significant aspects of the application, nothing precludes members or my fellow members from asking questions outside these themes nor to come back to an area already previously covered.

If members concur, I would like to start Theme 1, operating performance and performance assurance, including NRU, and I would start with Dr. McDill.

MEMBER McDILL: Thank you, Mr. Chair.

This is a considerable amount of material here, so I think I would like to start with some general questions, looking within Theme 1 at operating performance and performance assurance using staff’s CMD 06-H9 as a

guideline for questions.

My concern in particular is the ratings in 3.1.2 Quality Management and 3.1.3 Event reporting. The seize for program in 3.1.2 and implementation in 3.1.2 and then implementation for 3.1.3. There has been some discussion already in the earlier presentations but I wonder if I could ask staff to just go into a little bit more detail with respect to these deficiencies and then AECL to respond perhaps.

MR. LAMARRE: Greg Lamarre for the record.

I'll make some preliminary comments and I'll ask Mr. Paul Wong our quality management specialist to get into slightly more detail on our performance ratings. We'll start with quality management.

As Mr. Colligan noted during his presentation, what we expect from a Class 1 licensee such as AECL is a very comprehensive quality management system. What we have at present is an improving trend. What we have provided to you today as compared to what was available during the last re-licensing is a corporate QA program that CNSC staff finds acceptable. What is lacking is still the development and implementation of the lower tier documents for elements such as design, procurement, construction, commissioning, operation. Those are the elements that are still lacking but the improving trend is

supported by the fact that we are seeing certainly some improvements in that area.

I'll ask Mr. Paul Wong to provide a little bit more substantiation to my comments, please.

MR. WONG: My name is Paul Wong, Quality Management Specialist.

As Mr. Colligan was discussing during the presentation, the rating, the "C" rating for the quality assurance portion of the performance assurance rate section is primarily based on the performance during the recent inspection on the upgrades, on the NRU upgrades. The areas covered during the inspections were design, construction, commissioning and procurement.

In our CMD 06-H9 we have indicated that staff will update the Commission on the details of this inspection in Day Two, the primary reason being that the inspection was recently completed and the report had only recently been submitted and handed over to AECL for them to address deficiencies. So we would like to give more time for AECL to be able to take action before we provide more information. But in the meantime what I could tell you is that the programs, the deficiencies that were identified, although it was for NRU, were based on programs applied throughout the Chalk River site. It is a Chalk River commissioning, construction, procurement and

construction QA program.

In normal circumstances like in our previous licensing hearings we had based our rating on the operational QA program because that really is the cornerstone of an operating facility. Staff has been pleased with the progress that has been made in this area, the operational site. There have been some deficiency events noted by AECL itself in recent years and they have taken actions to make improvements and these improvements are reflected in staff's rating in the upward trend.

I guess if there is anymore details, perhaps, we can either leave it to Day Two or you can direct me further.

MEMBER McDILL: Thank you.

This is with respect to 3.1.2. Perhaps I'll just ask AECL to comment and then we can do 3.1.3.

MR. McGEE: Brian McGee, for the record.

We are in general agreement with staff's observations in this area. We have goals to improve operational quality performance.

I'll talk specifically about our response to the legacy quality assurance issues that were identified by CNSC staff, although it won't be a complete response because our response is still underway, but in regard to the Type 1 inspection of the two special safety

systems. And then I'll go on and I'll just talk briefly about our general strategy for improvement in this area.

I attended both the entrance and the exit meeting for the Type 1 audit. Upon hearing the information that was shared by staff at the exit meeting, although it was informal information at that point, at the adjournment of that meeting we immediately sat down to evaluate whether or not the reactor was still safe to operate. We assured ourselves through what would be called an "informal technical operability evaluation process". We don't have a formal TOE or technical operability evaluation process in place at this time.

We assured ourselves, using an informal TOE-like approach over a two-week period that we were safe to continue to operate the reactor. At the immediate time of exit we had sufficient information to satisfy ourselves that it was safe to continue operation of NRU and then we went further to expand our understanding and expand the details and depth of our review of the findings that were left with us. We dispositioned many of them. Many of them were related to legacy documentation issues.

Remembering that these upgrades were designed and installation started many, many years ago; some as many as nearly a decade ago, we went back and we recovered much of the documentation required. So we took

immediate compensatory actions to satisfy ourselves both that we had an adequate safe envelope for continued operation and to undertake to retrofit some of the necessary information.

That process will still be going on and we'll be expanding it to the other special safety systems involved. We're going to do a whole extended condition and we are developing our plans that we'll share with CNSC staff in response to that audit in totality between now and Day Two.

In general, where we are with our Quality Assurance Program, as I mentioned at the outset, we are in general agreement with staff's observations. We think it's a fair and balanced assessment of where we are with our program at this time.

We're not striving just to satisfy the staff's requirements and the QA Standards. The Quality Assurance Program will be a foundation that we'll build on, but we'll go well beyond that in terms of achieving operational performance excellence. We aren't striving in this area just to achieve compliance. It is a cornerstone, as Mr. Wong mentioned, of operational performance, but it's a cornerstone of operational performance that will build our basis for operational excellence and the basis for our overall safety culture.

So our goals are not just compliance in this area. Our goals aren't just to achieve the bravo rating of meeting CNSC expectations. It's integral into our overall operational success that we meet these expectations but go well beyond in achieving performance excellence. So our PINO organization and the approach that we are taking in this area is fundamentally designed to integrate quality and performance excellence into everything that we do.

MEMBER McDILL: Thank you.

Would you like to address the lower tier documents and timeframe for those?

MR. McGEE: Brian McGee, for the record.

The lower tier documents, our current assessment is that for the most part our processes will meet those N-286 series of requirements.

There will be some work required to improve the documentation to some extent and make sure that we have the clear links in our documentation to show where our documentation is designed to meet those requirements.

The actual timeline at this point is still under discussion, and I would expect by Day Two we will have a final timeline available.

MEMBER McDILL: Thank you.

Can we repeat the procedures for the 3.1.3

operational experience, please?

MR. LAMARRE: Greg Lamarre, for the record.

So if I can rephrase the Commission Member's question, it is regarding staff's conclusions on the C rating for the implementation of the OPEX Program.

If we go to CMD-06-H9 under "Assessment", and as previously stated during the mid-term in CMD-05-M33, there were a number of areas of concern that staff had regarding AECL's event investigation and reporting program, their OPEX Program.

These related to the failure in certain cases to actually identify the root cause of an event, the inadequate follow-up in terms of timeliness of resolving the root cause assessments, the corrective actions not being implemented in a timely manner either. And staff traced this back to -- at least partially -- back to resources and lack of, in some cases, a fully implemented OPEX Program facility by facility.

What staff is doing as a result of this, as noted in the CMD on page 9, is that we are planning on doing a follow-up type 1 inspection during the proposed license period.

At the same time as we brought forward to you today, staff recognizes that there are some improvements in our regulatory approach for what we expect

for reporting requirements. That is, the reason why the license condition proposed have been brought forward to tighten up the consistency and clarity of what we expect to be reported as well.

At the same time, I'm sure AECL would like to comment on their OPEX Improvement Program which we see at this point, although in its early stages, as a positive initiative. And, as I say, we will be following up during the period of the proposed license on how those improvement initiatives are coming about.

Thank you.

MEMBER McDILL: AECL?

MR. McGEE: Brian McGee, for the record.

Once again we are in agreement with staff's assessment of our Operating Experience Program.

I'd like to talk about three elements of operating experience. The first is event reporting and notification. It was acknowledge in, I believe, our presentation and staff's presentation that there were more reportable events -- events reportable to the regulator -- being identified. That's a typical response of an organization, or a typical characteristic at this stage of our development in this area. And so what I would suggest is that you should expect to see more and more reportable events occurring because we're driving the threshold for

reporting. We're driving the awareness of the organization to greater levels of detail of the reporting requirements.

And so in order to be transparent and to develop, it's really a cornerstone of safety culture, developing an organizational culture where there's open reporting and notification. We're replacing a lot of leadership energy in increasing the amount of reporting and challenging ourselves. Are we doing enough of this?

And so ultimately we want to drive the reporting structure down so that we're getting more and more low-level events. Industry-wide experience, not just in the nuclear industry, is clear on this. The more that you report at a lower level, the more understanding you have of your performance and the more you're able to arrest adverse trends before they develop into more significant issues.

So fundamentally, that's where we're going from a reporting perspective. So I'd ask the Commission to expect that you'll see more reportable events occurring at the Chalk River site. That's not representative of a declining performance trend. It's representative of an increased safety culture and an increased culture of open transparent reporting.

In the area of root cause analysis or root

cause evaluation, it's an area of some complexity. There's a great deal of industry experience in this area and, to some extent, what I believe that the industry as a whole has learned is that the more that you dedicate people to root cause analysis and root cause evaluation, the better the quality of your processes are; the better the quality of the results.

They tend to get -- develop their investigative skills or analytical skills and they end up developing better overall understanding of event cause and effect. They develop better recommendations and they assist the organization in identifying those very, very few items out of an event that you need to actually take action on to correct.

Typical of an organization that hasn't developed strength in this area is that you don't get to the root cause, you get to symptoms. You get to apparent causes in some case, or symptoms, and you end up with multiple recommendations that aren't necessarily related to the cause of the event. So you diffuse the organization's energy somewhat harmfully. You diffuse the organization's energy and you don't really fix the problem, you don't really fix what's broken.

And so as part of our desire to improve in this area, we have applied additional resources and we've

placed those resources in a role where they're going to be the leads on many of our root cause analysis, or many of our root cause evaluations. So we're narrowing the population of people that will do root cause evaluation with the expectation, as they develop greater and greater skill, the quality of our root cause evaluations will go up. And this is something that we're borrowing from industry experience.

The last item in the suite of operating experience items is actually sharing of operating -– of industry experience, both internal industry experience -- So in other words, our own experience sharing it well within the site in a meaningful manner, as well as borrowing from industry experience across -– not just the nuclear industry -– but across industry in general, learning from events that have occurred in other areas of industry; the petrol-chemical industry, the mining industry, NASA, the space program. There are lots of areas of operating experience that we can borrow from and learn those lessons and share to develop our safety culture.

And so that part of our operating experience program has been reinforced with additional resources and we're working with the rest of the nuclear industry to borrow from some of their practices that have

been proven to be very successful, and we're continuing to amplify our efforts in this area.

MEMBER McDILL: Last one for this theme. This sounds like a change in how your staff is going to have to react and participate. Have you encountered any resistance to change, or is this being handled with comfort? And perhaps I could CNSC staff to respond to that as well.

MR. McGEE: Brian McGee, for the record.

I see no resistance on the part of AECL staff, frankly, on any of the improvements. You've given me an opportunity to comment on just our general readiness for change, our general readiness to take the next step in our performance improvements.

The issues that we're dealing with in terms of performance issues of the things that we're talking about here today are pretty much classic in the nuclear industry. Most of the licensees across North America and worldwide, nuclear utilities, have gone through similar type of change programs and similar type of improvements.

So there really isn't a whole lot new in that area for us. And so the question is what's the readiness of the organization? Are the people within the organization to change? And so my observation as a relative newcomer to the organization is, I couldn't have

wished for better capability, for better people, for greater willingness to improve.

The organization has a hunger to be the best. We have a proud history. Our heritage is in the nuclear industry, we have a proud history. The organization, the people in the organization, recognize that. And if you sense my energy level go up a little bit when I talk about this, I'm excited because the people are so capable and so willing and want and have such a hunger to succeed in this area and to be the best.

THE CHAIRPERSON: Does CNSC staff care to comment also?

MR. LAMARRE: Greg Lamarre, for the record.

Although we haven't carried out any directed compliance activities against the types of issues that Mr. McGee is talking about and the corporation of change and their staff's attitudes against that. What we're clearly looking at are performance indicators. Those performance indicators will be a little bit longer term.

That being said, through our discussions with AECL management, I can say that they've been very open to their staff's attitude. I think what they've been saying to us is that in general, it's been very positive.

Clearly, when you're trying to implement

that kind of extent of change of a very large organization, there will be some elements of, shall we say, change reluctance and that, but we as staff have not seen any large indicator of that.

I would also like to highlight that with the very new establishment of our Chalk River site office, what we'll be expecting in the current licence period, the proposed licence period, is greater interaction on a day-to-day basis with the AECL staff, through production meetings, planning meetings. CNSC staff will, to a certain extent, be there and, I think, with those eyes and ears on the ground, we will be able to continue to monitor that throughout the period of the proposed licence.

MEMBER McDILL: Thank you.

Mr. Chair.

THE CHAIRPERSON: Thank you. We will come back to round 2 if necessary.

Dr. Barnes.

MEMBER BARNES: If I could just pick up on the comment of the proud history and I compliment your energy and enthusiasm, Mr. McGee, but I would temper it a little bit with the fact that a lot of the documents that we have here are also reporting or responding to problems of poor performance in the past particularly in the environmental area. So we are spending a lot of that

money that was mentioned in order to repair legacies.

A legacy is a historical record of perhaps poorer performance, which we're now recognizing. So I think in these sorts of processes of change, it's also important to recognize that and perhaps admit to that a little bit more.

Let me just come on to -- because I think to some extent, operating performance might be a reflection of organizational structure, so if I could get you to look -- I don't know if it's worth putting on the screen, your organizational diagram again, which was Image 18 of your presentation. It also appears twice in your printed publication, on page 7.

I'll just carry on while it's coming up. I think most people have the document. To what extent is this a real organizational chart or is it a schematic organizational chart?

MR. McGEE: Brian McGee for the record.

While they are getting the chart up, let me give you some confidence that we haven't forgotten the whole history. So we do recognize that when I talk about the proud history, you know, I'm talking, I guess, as a proud Canadian of the overall accomplishments in the Canadian nuclear industry we've made.

We're aware of the historical legacy issues

and how we're using that is; standards have changed and standards continue to elevate. I don't believe that there was any malice. And so we regularly ask ourselves, "What was it that they didn't see at the time that some of those issues were created?" And so how can we use it to make sure that the next generation doesn't look back at us and say, "What was it that they didn't see?" So we use that as a positive motivator to challenge our own thinking to make sure that we're not thinking too much inside the box and we're creating future legacies. And so we use that as a positive motivator, but I appreciate your observation there. It's one that we're very concerned about, very aware of.

The org chart is a fundamental -- it is the org chart. It's not laid out exactly the way it is on our typical org chart paper, but those are organizational units that are populated by organizational unit heads. So that is the organization as structured.

MEMBER BARNES: You've got 14 boxes then, units, reporting to you. And in the days of moving to flat organizations, it still seems to me some of those components there seem to be pretty large units. So you have 14 unit heads reporting to you. Do you have any time in your day to think of some of the bigger thoughts of your enthusiasm or does your enthusiasm get sapped by what

seems to be almost an impossible management task here?

So you're new to the system, but is this really an appropriate organizational structure to guarantee operational performance?

MR. McGEE: Brian McGee, for the record.

Your observation is an observation that I made and others have made on several occasions as we went through this organizational design. Fourteen (14) direct reports is an enormous span to control for a position like this. It's not an organizational structure that I would see being in place a matter of a few years down the road. It's an organizational structure that needs to be in place right now for two primary reasons, in my view.

One is I need to have the opportunity to work closely with all these fundamental areas and so, yes, it requires effort on my part, but it doesn't interfere with my ability to be in the field and to do other management activities. I guess you'd have to check with my boss on some of that, but it allows me to have direct involvement in many of these critical areas that are required for us to have performance in, in order to achieve our overall performance goals.

The other aspect of it is it's an organizational structure that will help us develop greater leadership capability. And so one of my primary focuses

-- one of many focuses -- is developing the leadership capability of the organization, both at this level and the next level down and the next level down and the next level down after that.

So this organizational structure really lends itself to both those objectives. Those are two primary objectives I have.

If you want me to try and crystal-ball the future, I would say that probably two or three years down the road, we'll start to narrow the span of control somewhat. But in the near term, I believe it's necessary.

MEMBER BARNES: Two or three other comments then. So when you communicate through this -- the nuclear organization that's reflected here, does that mean essentially bringing 14 people together or do you have a more mini-executive that represents subsets of this?

MR. McGEE: Brian McGee, for the record.

We -- that is the full leadership team and when we work together on strategic issues and issues of common purpose across the full site, that's the team that we work with and we've already -- we're not in a position at this point to share it, because it's still in draft, but we've already done some very effective work as a full team to develop a vision for the site and some statements of strategic direction. So if you want a strategic plan,

a strategic direction for the site and, frankly, in my experience, in a two-day exercise as a team, probably the best team-building, the best team interaction and one of the best quality of products I've ever been a party to, that came out of it.

So it is an effective team structure when we do work together.

There are many times when the subset of the team is at work. And so focussed on operational safety oversight, for example. We have a regular monthly meeting for that. It's not the full team. It's members of the team that have a critical part to play in that, or are in a position where they can offer critical insights.

Performance oversight, again, a different subset of the team. So we do have a committee structure if you want, or a team structure that uses subsets of the team.

MEMBER BARNES: I wonder why the project manager in office, which is at the very bottom there, isn't more affiliated with the four units on the left, or does that matter?

MR. McGEE: Brian McGee, for the record.

If you can visualize the four units at the left as basically vertically aligned organization -- lines of business if you want, but vertically aligned and then

the rest of the organization are basically horizontally aligned. So the Project Management Office is a direct service provider to several of those vertically aligned organizations. And the reason that they are off separate is because they do provide service to several of them, in fact, to all of them.

So that's the way to visualize it, if you can, is that it's vertically aligned and then the support functions are all horizontally aligned.

So it's really a design that takes us to an integrated site operation and some of the legacy performance issues that have been discussed by CNSC staff and that we've commented on, really a contributing factor was that we didn't have sufficient overall site integration and that's what we're achieving here.

MEMBER BARNES: Again, just coming back partly to the issue of operating performance and the "C" ratings, especially in the quality area, these days in organizational charts like this one I expect to see a QA person at a high level and somewhat remote from the operational areas and reporting directly at a senior level.

So I wondered why, for example, there wasn't -- you've got the chief regulatory officer, the chief security officer, why an organization like this,

given where we are, given the problems that you're facing, particularly the legacy ones and where you're going, why you wouldn't have a box that says quality assurance or chief QA officer at that level?

MR. McGEE: Brian McGee, for the record.

The PINO organization, the senior director of PINO is in fact that role. The industry has moved away from a pure QA model because QA too often is treated as a bolt-on. This model integrates quality assurance and performance assurance and integrated performance improvement throughout the organization. And in my experience, whenever quality or safety are treated as bolt-ons to the rest of the business it's not as strong a model as when you integrate it into the actual day-to-day operations of the business integrated into the line organization.

So there's really two aspects of quality to this organization. It's the integrated performance assurance, quality assurance, performance assurance, performance improvement model integrated into day-to-day line activities, and it's also the PINO organization, which is QA nuclear oversight, you know, quality assurance, performance assurance.

MEMBER BARNES: Does staff have any comment on whether this is an appropriate organizational structure

to resolve the issues that you've identified?

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

From an organizational standpoint we haven't done a formal assessment but we do recognize the way this has been set-up as a matrix organization with service lines or business lines down the left and the other support lines. So we see this when you have a facility like this that has to draw upon a lot of common resources, but we haven't done a formal assessment.

But I was going to ask Mr. Lamarre just to add a couple further comments.

MR. LAMARRE: Greg Lamarre for the record.

When Mr. McGee created this organization, in advance of that, staff was provided with information as to where they were going following the release of this organizational chart and the new matrix organization. AECL consulted with us. They discussed with us why they were going in this direction.

The extent of review, as Mr. Howden says, performed by staff is limited. We recognize some of the values in the direction that Mr. McGee and his group are going; one of the chief ones being that the responsibilities, the accountability as licence holder is one person now, and it's very clearly Mr. McGee. In terms

of the safety at Chalk River, there's no question at all that that responsibility lies at his desk and his desk alone, and we see that as a positive move.

From a quality assurance side, staff has noted to AECL and AECL is preparing to make the documentary changes, the revisions to some of the quality management documents necessary to incorporate the changes and make it formalized. But as Mr. Howden says, that's the extent of our review to date, but from what we've seen we are satisfied that AECL is going in the right direction with this new organizational structure.

MEMBER BARNES: A separate topic, and that's the one of training, which again staff was somewhat critical of. It seemed to me that in the statistics that AECL brought into this document that you're certainly making a huge effort in that 17,000 or so people are being trained, and AECL has also indicated that you've just hired another 200 and you've got another 150 to go.

Could staff just clarify again what your main concerns are with the rating and the training?

MR. HOWDEN: Barclay Howden speaking.

I'm going to ask our training assessment specialist Richard Cawthorn to respond to that.

MR. CAWTHORN: Richard Cawthorn for the record, Personnel Certification and Training Program

Evaluation.

What we're -- the situation basically is one of modernization. Training has been integrated throughout all of the activities at AECL in more historically and primarily an informal mentoring apprenticing-type program.

When the CNSC adopted a SAT-based approach as our expectation back about 2000, AECL agreed with that and put in -- started to develop the corporate level documents that would guide the formalization of training throughout, similar to the Quality Assurance Program. They've been primarily focused on the corporate level.

We did an evaluation in 2000 and there was a little bit of a loss in follow-up to the deficiencies and staff believed primarily due to staffing. But they've got it on the road now. We closed all the corrective actions to those deficiencies in December 2005 and we're convinced that they have good SAT-based documents for training.

Now, where the -- so that's the design and it meets our expectations. Where they need to do the work now is in the rollout and implementation in the different facilities and licence activities below that.

They have used a risk informed approach where they're primarily directing their activities at the

high-level risk areas, NRU, DIF, and formalizing their training in those areas. And until that's completed and those lower-level documents are done that's why it's a "C" rating.

MEMBER BARNES: And what sort of schedule, what sort of time do you think AECL needs, at the rate their going, to bring that rating up to roughly a "B"?

MR. CAWTHORN: Richard Cawthorn for the record.

The timeline on the completion of the SAT -- implementation of the SAT Program has not really been identified to us yet. The focus, I think, over the last couple years has been primarily on the physical side of NRU and the other areas have been priorities.

They have hired and retained additional staff that are now dedicated to training. Prior to -- recently, training was supported by line managers and people actually doing the NRU operations. Now they have an NRU training manager dedicated to developing these programs and we expect to start to see a -- we've discussed that we need an established timeframe with deliverable dates to be set up and they are now working on that. I expect that to be forthcoming hopefully before Day Two.

THE CHAIRPERSON: Just as a follow up,

would maybe CNSC might -- not CNSC but AECL might like to comment on what their achievement on timelines might be.

MR. McGEE: Brain McGee for the record.

It might be difficult for me to suggest when the CNSC staff would give us the bravo rating that we're referring to here, but perhaps I can state the timeline I think it will be required for me to be satisfied that our training program is adequately covered in terms of SAT-based approach.

I would like to emphasize that there are aspects of the program that are currently SAT based and part of the weakness is in the formality of it, and this is a pretty typical situation where you fundamentally have built a training program but you haven't gone through some of the formal SAT work. So to remediate that it's really a remediation, and it typically takes less effort than in those areas where you don't have any SAT-based training -- SAT-based platform for training at all.

So the timeline that I would expect we'll be making progress, continual progress, I would expect that the areas of significance NRU will be a focus area and we'll be placing our effort in the NRU area in the near term. On all the facilities I would expect somewhere in the range of two to three years for us to have covered off on a SAT-based level all the significant training

aspects.

So it's a graded approach. It won't be an all or nothing. It's a graded approach so we'll be taking that.

THE CHAIRPERSON: Thank you.

Dr. Dosman.

MEMBER DOSMAN: Thank you, Mr. Chair.

For AECL, there's been a lot of discussion on quality and I have one or two further questions.

I appreciated your comment, Mr. McGee, that you're not just seeking the ratings, you want to have AECL be a model for performance. You spoke of symptoms and perhaps I could then carry the analogy one step further and speak of diagnosis.

Obviously, the site is exceedingly complex. I think it was mentioned there's something like 147 buildings and if I calculate 2,000 workers obviously you have a very complex workforce in which you have very small groups of people working together in individual subcultures, I would think.

So is the issue on quality performance more the creation of appropriate documentation and procedures in those small cultures? I would appreciate if you can confirm that my supposition is correct about the location -- or is it more changing the cultures within those small

units? Which of those -- or is it both? Would you be willing to comment on that phenomenon and specifically how you're going about making change?

MR. McGEE: Brian McGee, for the record.

It is a complex site and it does have many buildings and many facilities. I mentioned earlier in my statements that to some extent we haven't adequately integrated our overall approach to performance across the site. There are weaknesses in some of the documentation that we will be dealing with and we'll continue to address that on an ongoing basis.

I wouldn't say that the fundamental problems are documentation. I think there are some -- to some extent, I don't think we've done enough to stay in touch with the rest of the industry and where they're going in this area, and I don't mean just the Canadian industry. I mean the industry worldwide.

So to some extent, the work that we're doing is to bring us back into alignment with industry practice. So you know, if you say that's a cultural issue then I guess that probably is. Again, I want to reinforce the positive nature. The people really want to do well in all these areas and so we're doing a lot of work to get ourselves in alignment with industry practice in this area.

The subsets, if you want, it's a difficult issue from an organizational culture point of view because you don't want to completely extinguish people's pride in the specifics of their workplace and the specifics of the work that they're doing. You don't want to extinguish that, but at the same time you want them to have a unified sense of purpose about why we're here as an overall site. I think we're making substantial progress in that area. The people on the site are, as I've mentioned before and I'll keep mentioning I'm sure they're very open to this change. They want to be successful and they are very open to these changes.

So we have work to do and it is a journey. You know, it will be a step process that we'll go through as we improve our performance in these areas, but I'm very optimistic that we will be successful.

MEMBER DOSMAN: I have several other questions.

How is the cooperation of the various unions involved? Obviously, in effecting change you might need to change certain responsibilities and so on. How is that going and do you have the freedom to make the kind of changes that you need to make?

MR. McGEE: Brian McGee, for the record.

I'll start at the back of your question.

There’s been nothing from a union collective agreement perspective that I’ve encountered to this point that has been a barrier to our improvement.

The leadership of the union, I place a lot of focus on leadership of the organization. We’ve talked about that a couple of times already. I place a lot of focus on developing the leadership of the organization. The unions are leaders as well. They are elected leaders and they have a part to play in our success. I view them as our partners. The experience -- I have met with them several times already. My experience with the union leadership is that they’re very willing -- they are very willing to work with us to achieve the success that we know is possible and so I have a very good feeling about the union relationships on the site.

MEMBER DOSMAN: Sir, I wonder if I might address CNSC staff the same question?

THE CHAIRPERSON: I think what Dr. Dosman is asking is observation. Have you observed that there is concurrence and so on?

MEMBER DOSMAN: Perhaps, Mr. Chair, if it’s helpful, I could rephrase the question? I had asked Mr. McGee how things were going with the various unions on the site and whether the union leadership represented an assistance or an obstacle to effecting improvements and so

I'm just asking you your views on that issue.

MR. LAMARRE: Greg Lamarre, for the record.

We don't have any information to indicate that any of the negotiation that is going on between AECL management and union representatives and union management is going in a negative direction at all.

Clearly, with enhanced regulatory oversight onsite with the site office we'll probably be in a better position in terms of having the resources in place at the right time to engage periodically in these types of discussions that go on between AECL management and their workers, but at this point here it would be purely speculative. But I think the important point to note is that we have no indication of any negative connotations coming out of what AECL is trying to do, where they're trying to move the organization and any potential reactions from the union.

MEMBER DOSMAN: Mr. Chair, I'm just wondering if I might pursue? A number of the issues around quality are focussed on the NRU and, in particular, on some of the current changes that were being made to the unit, upgrading and so on. In the end, you did indicate that some of these changes have been a number of years in the coming and there's a certain momentum.

But I'm just wondering if you could --

would be able, Mr. McGee to comment specifically on how it's going in our NRU in terms of some of these issues and, in particular, whether you believe that AECL will have the capacity to effect some of the licensed conditions that are outlined in Appendix F of the document.

MR. McGEE: Brian McGee, for the record.

In my presentation I mentioned that the licence conditions that have been proposed by CNSC staff; we're still discussing some and some we're in agreement with completely. Some others we're still discussing with staff.

The licence conditions will represent a substantial level of effort. We want to make sure we understand that level of effort and that's part of the discussion that we're having with staff as well. So again, between now and Day Two we expect to have further discussions with staff and we'll have a full understanding of the level of effort required for the organization to achieve the licence conditions as proposed.

In general, your question about generally how are things going in NRU, we're seeing substantial performance improvement. There's still a lot of work that we need to do. There's still a lot of progress that we have to make and I think both -- we have acknowledged that

and I think staff recognize that.

But we are making good progress on the journey to the level of performance of excellence that we are striving for, that we will achieve.

So in general, we are on track with the performance improvements at NRU.

MEMBER DOSMAN: Mr. Chair, Mr. Van Adel referred to hiring really quite a large number of new staff and I just wondered if somebody, perhaps Mr. McGee or others, Mr. Van Adel, would be willing to comment on specifically where those -- not in detail but the general focus of the new staff and the context of some of these issues.

MR. McGEE: Brian McGee, for the record.

A substantial number of staff, a portion of the staff that we're bringing -- we're bringing in large numbers of new people partly to the attrition, partly to satisfy the resourcing needs of new programs and also to improve our performance overall. You heard me reference additional staff and the Operating Experience Program, so there's a direct example of bringing staff in and bringing them up to speed in their capabilities to help us improve a quality-related aspect of performance across the site, including NRU.

One of the advantages of the organization

structure that we showed earlier was, again, with this integrated approach, you become more efficient as an organization because you're not trying to invent improvements in little pockets around the site. You're doing it on a site-wide basis. So you get efficiency but you get effectiveness as well because you're improving overall site performance.

We're putting more staff into NRU directly to deal with maintenance issues, to improve our maintenance program in the operator training area. So on a number of key areas critical to our successful operation we're augmenting our staff levels.

MEMBER DOSMAN: Thank you.

THE CHAIRPERSON: Thank you. I just have one question with regard to the large amount of staff you have and the amount of training that you're talking about and the new direction and the positive direction that you want to go. My question is not necessarily with regard to unions and union participation but just generally the worker participation.

Are you having any problem with buy-in from some of the older workers that are more or less set in their ways, as the saying might be, or that are reluctant to see change and to see change in the way that your vision is? Could you comment as to buy-in? On a scale of

1 to 10, are you at a scale of 9 or are you at 9.9 in buy-in by staff?

MR. McGEE: Brian McGee, for the record.

On a scale of 1 to 10, you know, I guess I'd be constantly updating the scale depending on the area of improvement we're working on. So I'll try and give you an answer, a fair answer on a general basis. I would say that on a scale of 1 to 10, we have a value of 8 on the buy-in scale and it's probably -- I'm probably hedging a little bit because, you know, with each improvement that comes along, people are going to have their own individual reaction to it.

The leadership team -- you know, the buy-in if you want really has to start with the leadership team and the leadership team in the organization is really, really quite strong. The people that are in those organizational units that we showed on the overhead slide earlier are really dedicated to achieving these improvements and are working very hard.

So we have that -- because it really can’t be just about me and the changes that I'm making. It has to be about us as an organization. So the leadership team is really engaged with the changes and all the evidence, all the visible evidence is that the staff are as well.

But change is a tough thing for any of us

at any stage of our lives. So when I'm speaking with staff on a face-to-face basis, I've shared that belief with the Commission before that I have regular face-to-face meetings with all my -- all levels of the organization, including with frontline staff and we're just completing going through the roughly 2,200 people; one more meeting for this cycle.

One of the things I share with them and I share it when I'm doing my walk-arounds, my observation and coaching tours around the site, my own personal experience is with change and what I share with them is that nuclear professionals is a behaviour. It's not an accreditation. So everybody that works for me I expect to be a nuclear professional. And so part of that is understanding what the public and what the regulator expects from us as a minimum level of performance.

So I share with them some of the -- you know, in the early stages of my career, when some of these human performance tools which is typically an area where people do struggle, when some of these human performance tools came along, how I had some self-doubts, how I felt that somehow it was a criticism of my ability to function as a professional. And it wasn’t until I started to understand that it wasn’t because they doubted my professional rationalism, it was in fact because they

understood and wanted me to continue to be professional that these types of tools were being put in place.

Workers at all stages of their career relate to that. I think it's important that we acknowledge to people that some of these changes will be tough at times and they will have self-doubts and they'll wonder why it's necessary. But the more that we communicate to them, the more we share our own experiences with it and the more we share our industry experience, the more comfortable they're going to be with the changes and the more that they'll buy in. The visible evidence is that yes, they're bought in.

THE CHAIRPERSON: Thank you. We will now go to round two for theme 1.

Doctor McDill, do you have any further questions?

MEMBER McDILL: Not for round two, no.

THE CHAIRPERSON: Doctor Dosman?

MEMBER DOSMAN: I don't think so, Mr. Chairman.

THE CHAIRPERSON: Okay. Thank you.

I just have one comment and I could leave it perhaps until the end of the day when we get through the various themes, but, Mr. McGee has mentioned -- stated on several occasions that with some of the licence

conditions you have full agreement and other you don’t and some that you will be working and coming back in Day Two.

I wonder if it might be good to at least get a sense of -- and I don’t want to go into a long listing, but a sense of some of the licence conditions that you have disagreement. Because there is concern that if there is a large list and these are submitted in Day Two, that intervenors will also have a chance to react and that they just don't come in a document a few days before the time of Day Two hearing.

So I wonder if you could give us an observation of some of the conditions that you may not be in agreement with at this time?

MR. McGEE: Brian McGee, for the record.

I'll turn that question over to the Chief Regulatory Officer Glenn Archinoff. I guess what I would say is that we see this as a normal part of the process. You know, maybe disagreement is a bit strong. We just want the opportunity for more discussions and I think that's fundamentally where were are right now, but I'll turn it over to Glenn. He can elaborate.

MR. ARCHINOFF: Glenn Archinoff for the record.

Yes, I was going to say the same thing Mr. McGee just said. I think “disagreement” is too strong a

word at this stage. We've just seen some of the new proposed licence conditions recently and we just want to be sure that when the new licence is issued on August 1, that we're not inadvertently put into a state of non-compliance because perhaps we needed a transition period and it wasn't offered. So that's something that we'll be commenting on to CNSC staff.

An example of that would be the proposed condition on CSA-N293 on fire protection. The current wording doesn't really allow -- doesn’t include a transition period. So we might find ourselves on August 1st in a non-compliant situation. So that's an example of the kind of feedback we'd be providing to CNSC staff.

Some of the other licence conditions like, for example, the ones on CSA series of standards, those are already embedded in our governing documents. So we would have no issue with those. And there are a few other ones where we want to be sure again that we really understand what the requirements are and that they're really clear to us so that, again, on August 1 we can be in a compliant position.

So again, I wouldn’t say that we're in disagreement. We just -- as Mr. McGee said, we need to have some more dialogue with CNSC staff and what we propose to do is, as early as possible in May, to

communicate formally through a letter to CNSC staff the feedback that we would have on the proposed licence conditions with a view to obtaining clarification well in advance of Day Two.

THE CHAIRPERSON: Thank you.

Mr. Howden?

MR. HOWDEN: Thank you very much.

I'm going to ask Greg Lamarre to comment on the process we use for establishing licence conditions, just to give people an idea because some go in and they're very much something that should have been done before, whereas others are newer and so there is a process that we follow to establish them.

So I'll ask Mr. Lamarre to comment.

MR. LAMARRE: Thank you, Mr. Howden. Greg Lamarre, for the record.

Perhaps I can just break them out. There's a large number of licence conditions associated with environmental protection issues. Clearly that came out of the SDR that was brought forth on sewage sludge where the Commission Members requested staff to carry out a fulsome comprehensive environmental protection regulatory requirements review.

So many of the conditions that you see in there are the product of that review. Much time and

effort went into that from staff in doing very much a base-lining and a comparative analysis, as the CMD alludes to, with other similar licensees, similar risks, similar size, bringing the regulatory regime for Chalk River up to what we would deem more modern standards.

There was, I would say, a reasonable amount of communication to AECL on those. Some of the other ones that you're seeing in here came about perhaps in shorter time frame and I think it's fair for AECL to be given some period to comment on those. Clearly, the regulatory requirements will be paramount and we will not budge on those. As Mr. Archinoff I think has alluded to though, there might be some clarifications to ensure that AECL is not put into a state of non-compliance immediately and I think staff would be reasonable in reviewing and possibly accepting some of those.

THE CHAIRPERSON: Thank you.

I guess my concern and that of my colleagues would be that -- and I echo that of my colleagues -- that if there is discussions back and forth between now and Day Two, that this information be provided between AECL and CNSC or vice versa, that this information be provided sooner rather than later, say, perhaps by the 28th of May or so, so that not only Commission Members but also intervenors have the time to review that. If it

comes in at the last moment of the deadline, it will be very difficult for CNSC members and also -- or Commission Members and also intervenors to participate in a meaningful way.

So my question would be or my direction, I guess, would be is that if there are objections or if there are concerns, if there are discussions and there are documents being prepared, that these documents be prepared and provided sooner rather than later and perhaps maybe a date of May 28th or so.

Mr. Howden or Mr. Lamarre, you wish to comment?

MR. HOWDEN: Thank you. Barclay Howden speaking.

I just wanted to assure you, Mr. Chair, that CNSC staff is cognizant of Day Two being primarily for the intervenors and the importance of having the information out there not only for yourselves but for them to be able to comment. So we are striving towards that.

Our expectation is that changes maybe would be minor. However, until we receive the next feedback from AECL, we'll be able to confirm that.

As well, on the NRU side of the shop, as you can see, all the initiatives that are going on with NRU, as we've laid out and I think we'll be talking about

later, our expectation is that there will be further regulatory requirements in the form of licence conditions being proposed to you on NRU that have not been contained in this document at this point in time. But that issue is being worked on literally on a daily basis, such that we can forward as best recommendations as we can.

But the timeliness issue is very important to us because we want the intervenors to feel that the process has been fair such that they can adequately comment. Thank you.

THE CHAIRPERSON: Thank you.

Does AECL wish to comment also?

MR. McGEE: Brian McGee for the record.

We're committed to a speedy resolution of this as well. So the May 28th target you suggested is easily within our reach.

THE CHAIRPERSON: Thank you.

Perhaps maybe I was a little hasty in saying a specific date of May 28th, but I guess we all have to be -- I want both parties to be very much aware that giving intervenors the proper time to work towards -- May 28th is not necessarily carved in stone, but it should be sooner rather than later.

With that, Theme 2 is going to be, I think, perhaps quite an extensive one, environmental protection.

So I will call for a five or six-minute -- well, I had better be specific, I guess, like the Chair always is. We will come back at 11:14. Thank you.

--- Upon recessing at 11:06 a.m.

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

THE CHAIRPERSON: As we indicated at the start this morning after the presentations that we would go by themes, and the second theme that was mentioned was environmental protection, and I will now ask Dr. Barnes to start the questions.

MEMBER BARNES: Thanks.

I referred to some of these in my introductory comment. Obviously, there is a substantial legacy, an environmental legacy problem here on the site and you've certainly documented a number of the areas in your material, which I appreciate.

I would like to start by -- we certainly, I should say, have visited these on earlier occasions. So in some ways the situation hasn't changed except I think AECL is clearly taking it more seriously now and, to some extent, in retrospect, having to put a substantial amount of resources into solving problems that might have been addressed earlier and at a reduced cost today.

So let's just start with the issue of the plumes. And if I could refer you to page 68. This is

LP002, CRL-005.21 LP. It's your main document, page 68, which is Figure 3.9. You have a series of figures, four or five figures that take us through the waste management areas. So this is for waste management "C". You have on there two kinds of wells, an observation well, which are the small squares, and then the coloured groundwater sampling location.

So I wonder if someone at AECL could tell me essentially what the difference is, what you measure and record at each of those two types of points?

MR. McGEE: Brian McGee for the record.

I will ask Bruce Lange to answer that question.

MR. LANGE: Yes, for the record, I'm Bruce Lange. I'm the Director of Waste Management and Decommissioning Operations.

The observation wells are used primarily for determining things like groundwater movement, hydraulic head, things of that sort. That's the means by which we map out some of the groundwater contours showed on a number of these maps.

The groundwater sampling locations are wells that are used specifically as part of our operational control monitoring program or a groundwater monitoring program to, twice a year, extract a number of

samples for subsequent analysis that is then reported as part of our annual Groundwater Monitoring Program Update.

MEMBER BARNES: So if I interpret that then, the actual results in terms of the degree of contamination of these are taken from the groundwater monitoring wells?

MR. McGEE: Brian McGee for the record.

I'll ask Bruce Lange to answer that question.

MR. LANGE: Bruce Lange for the record.

Yes, that is correct.

MEMBER BARNES: So if we refer to Figure 3.9 and one can also compare it -- sorry, this is a large document -- but further in another part of the document on PDP002 on page D15, which is Figure D4, where you more graphically and simply illustrate as in the caption, "Plumes Originating From Waste Management Area C - the Nitrate Plant and the Thorium Pit", and there we see quite elegantly and simply the areas occupied by the plumes.

I wonder, if we then compare those two documents, the second one I referred to outlining the plumes, the first one on page 68 outlining the waste management areas and the groundwater wells, I wonder why you have a set of wells running along the road there on the west side of Waste Management C of the nitrate plant.

Essentially, you're using these for your groundwater sampling virtually all along one particular elevation of the groundwater table and that you have apparently no groundwater sampling along the dimensions of the plume which go from the coloured areas, Waste Management C, for example, towards Duke Swamp, which is shown on the Figure D15 quite nicely, the nitrate plant plume, the thorium pit plume, the subsurface tritium and radiocarbon plume, one of those going to Duke Swamp and another plume from Area C going down directly south across Plant Road.

So the purpose of this question is to ask how you're monitoring the values of these plumes in an aerial extent as opposed to just monitoring the chemical nature of those plumes more or less immediately on the west side of the area of the contamination.

MR. McGEE: Brian McGee, for the record.

I'll refer that question to Bruce Lange.

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

The wells that go along the road, those would be indicated on page 68, C-266, 265, 268, et cetera. Those are the wells that we use as part of the Groundwater Monitoring Program on a semi-annual basis to determine if, indeed, the flux of the rate of release of tritium from area C has changed. That's a very good indicator of

changes in circumstances surrounding the properties in the leaching of the material within Waste Management Area C.

When we do an aerial extent we use a combination of techniques. For one, the dotted lines on figure 3.9 indicate the flow direction of groundwater and from knowing that we know that if the source is, as indicated by the wells close to Waste Management Area C, then groundwater considerations would dictate that the plume look accordingly.

At the same time, when we do regular updates to the plumes which we have identified in 2002 to CNSC staff that we would update these plumes on a regular basis, we go in and we put in additional sampling wells. We may, in fact, use those observations at that point to re-confirm that the identity and the aerial extent of those plumes are as shown here. So we use a combination of techniques.

We semi-annually look at the extent of migration of radiuonuclides close to Waste Management Area C. We look at the groundwater properties, the hydraulic heads to determine, you might say in theory, how that material would move, and then we put in wells on an as-required basis to confirm those predictions. And that's what we see in figure D4.

MEMBER BARNES: I'm just trying to find out

whether -– because we recognize that the plume is a problem. There's substantial talk now of having a Groundwater Monitoring Program. Staff are recommending that this be a site-wide Groundwater Monitoring Program. But when I look at these it seems to me that you're not really monitoring the -– you slightly qualified it by saying "Well, when we need it we can go to these observation wells and take samples". But I would have thought if you were really trying to understand the flow of contaminants away from certain -– I'll call them point sources, they're area sources -– that you would want systematically to measure that into areas of concern which are the principal creeks or, in this case, a swamp.

Using this as an example I could -– you know, there's several pages like this of individual so-called point source areas. And so I would have thought you wanted to have a systematic measurement of the level of contamination, especially close to water bodies, so that you really did understand the level of contamination as you approach these water bodies which, in turn, ultimately all flow down into the Ottawa River.

MR. McGEE: Brian McGee, for the record. I'll ask Bruce Lange to answer that.

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

It is our position that the picket fence of monitoring wells that go along the east side of area C do indeed provide us with a systematic understanding of the material that is moving out of Waste Management Area C; that being the source term for subsequent movement as shown in the plume.

At the same time, of course, we do monitor Duke Swamp, the surface body where the groundwater expresses itself. And, again, there are a number of observation wells. In this case, the squared wells that we do sample periodically to confirm that looking at what we are seeing in the surface bodies as well as what's coming directly out of area C corresponds with what we would predict would be in that plume.

So I think that we are being, in our mind, very systematic about our approach to evaluating and monitoring these plumes. We've had the program looked at by hydro-geologists, for example, Jacques Whitford in their consultancy examining the nature of our Groundwater Sampling Program, asking them to provide us advice as to whether we should be enhancing or modifying this program. That was, in fact, the basis of the Groundwater Program that we ultimately agreed to provide to the CNSC on an annual basis

In our view, the nature of the program is

systematic and it has been well vetted with hydro-geologists and consultants to confirm that position.

MEMBER BARNES: Maybe I'll just ask staff for a comment. I guess what I'm getting at here is you're now giving me assurance, but I'm not sure if the document really shows that assurance. What it shows me in these diagrams is you've got two kinds of sampling. One, go back to your original answers that you're sampling at the groundwater sampling locations which implies that that's where you're sampling and not necessarily the observational wells. Then you're saying, "Well, when we need to, basically, we will do that at a picket fences", but as far as I can see there's no record of that in this document or any data.

So although we're being told here that, "The plumes, and there's a problem and we're going to address it", there's no information in this document of any one of those plumes and how the contamination changes along the dimension of that plume or across the area of that plume.

Does staff have a comment on this?

And the comment being either in the problem, whether the sampling truly is systematic, and whether it's adequate to properly understand the -- I'll call it the plume dynamics over time and, therefore, the

remediation of that problem.

MR. HOWDEN: Barclay Howden, for the record.

I'm going to pass this question back in a moment to Dr. Ben Belfadhel to comment, because he has been responsible for doing a comprehensive review on behalf of the CNSC with his colleagues on the groundwater regime.

As you can see from our CMD that we are making a recommendation to the Commission because of some of the deficiencies. Although there is a comprehensive system, we're seeing weaknesses in them, so I'd like him to comment on sort of the problems we've identified and why we think that a more formalized program is needed. So I'll ask Dr. Ben Belfadhel.

DR. BELFADHEL: Thank you, Mr. Howden.

This is Mahrez Ben Belfadhel, geo-science Specialist.

Dr. Barnes, we share your concerns about the characterization of the plumes and the type of monitoring that is being done. As Mr. Howden indicated, we are in the process of conducting a comprehensive review of all groundwater monitoring programs across the site. The objectives of these programs -– review is to assess the adequacy of the Chalk River groundwater programs,

review the current structure for reporting the information to CNSC and also assess the need for remediation.

As AECL indicated, there are different wells. Some of the wells -– the ones that you see in red in the figures are the ones that are reported to the CNSC, but the other ones are not reported. However, AECL is monitoring all these wells and updating the information in terms of the plume migration.

So although, in general, we are satisfied with the Groundwater Monitoring Program in terms of detecting the contaminations, we find that there is a lack of consistency in terms of conducting the monitoring programs and also in terms of the characterization of the plumes. So we don’t really understand the rationale for the approaches and the methods that are being used by AECL. And this is why we are recommending condition 712 which is to characterize all the known plumes in terms of spatial distribution, in terms of loading and progression and also based on that characterization, evaluate the adequacy of the monitoring programs and maybe also to look at possible remediations.

MEMBER BARNES: And to AECL, then, you understand what is being required in the condition that’s being requested here and would you be significantly modifying your existing so-called Groundwater Monitoring

Program to meet the new licence condition or do you believe that you in fact have the data and you're simply not reporting it under the present regime to CNSC staff to properly characterize the plumes?

MR. McGEE: Brian McGee for the record. I'll ask Bruce Lange to answer.

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

There is a number of answers. I think that we can indeed be doing a better job to communicate the results of our monitoring program to CNSC staff. We have been quite thorough I think, as acknowledged by CNSC staff, on the waste management areas but we now know we have to integrate that into the other groundwater monitoring that's taking place on the site.

We've done a great deal of work in our Groundwater Monitoring Programs. We have had evaluations done on the nature and the effectiveness and whether we have enough groundwater monitoring sites. I'm not sure that we have communicated as well as we should the results of those kind of studies. A lot of them have been, for our purposes, to ensure ourselves that we are establishing a good program.

So I think as a result of the team that -- when we met with Ben it was clear that there were some

opportunities for us to provide more information, perhaps information that we already have but hadn't communicated. If there are concerns on the part of the CNSC staff about the adequacy of the program I think we now have a mechanism in place that will allow us to very clearly identify those gaps and we will simply upgrade, update, enhance and combine and integrate the various components of our Groundwater Monitoring Program to ensure that we are providing CNSC staff with a level of information that they require.

MEMBER BARNES: Could I just pursue it a little further and just ask staff: Have you seen those groundwater faults from Jakes Whitford?

MR. BELFADHEL: I'm sorry, Dr. Barnes, which reports?

MEMBER BARNES: The reports that Mr. Lange referred to -- I think it was Jakes Whitford, wasn't it, that do -- the groundwater external consultant reports on their programs.

MR. BELFADHEL: As far as I'm concerned I haven't seen them. Maybe other staff members have reviewed them.

MEMBER BARNES: Or I could ask AECL, were these shared with CNSC staff, the consultant's reports?

MR. McGEE: Brian McGee, for the record.

I'll ask Bruce Lange to answer.

MR. LANGE: Yes, as part of the rationale for the -- we had started -- Bruce Lange for the record. Sorry.

(DISCUSSION OFF RECORD)

MR. LANGE: Yes, February 2002 the reports were submitted.

The reason they were submitted was that AECL established an Operational Control Monitoring Program back in 1997 that was very comprehensive. As CNSC staff identified that they would like something formally reported to them on an annual basis we sought the help of Jakes Whitford to say, "Well, what do you think comprises the best set of wells and the best set of monitoring circumstances that we should then ingrain into a regulatory submission?" We then made that submission to CNSC staff on, say, February 2002 indicating the nature of the Groundwater Monitoring Program as well as the rationale that underlay the recommended approach. So that documentation was submitted.

MEMBER BARNES: Staff has a comment?

MR. HOWDEN: I'd like Dr. Thompson to comment on those reports, please.

DR. THOMPSON: Patsy Thompson, for the record.

AECL's licence that was renewed in 2003; the previous licence to that had a licence condition requiring AECL to develop a Groundwater Monitoring Program for the waste management areas.

AECL did submit documentation to the CNSC in 2002. Those documents were reviewed and the Groundwater Monitoring Program was accepted. That accepted program forms the basis for what AECL is currently reporting on an annual basis. What has changed since the period when that program was reviewed is the regulatory philosophy behind our requirements for environmental monitoring. At the time the monitoring was being done to track the plumes.

Currently, with the regulatory document that CNSC is developing for environmental monitoring programs, what we require is a program that is auditable. Essentially, what we need is a design document that will indicate what is being monitored, for what reason and where for the purpose of taking regulatory action should environmental impacts change over time and become not acceptable.

We also expect to see parameters and values for those parameters that will trigger action from the licensee. We require also quality assurance and quality control measures to provide assurance to us that what is

being reported is accurate information and is reliable. We also expect the licensee to conduct regular program reviews to make sure that the program is updated and continues to be effective for the intended purpose. That is what is currently lacking, is that integration of the program with the site issues. What we've received since is a lot of information in annual reports but also the Environmental Effects Review document that AECL submitted to CNSC staff and that could form with the additional information the detailed preliminary Decommissioning Plan and the Five-Year Plan. All those elements that we now have could form the basis for a redesign in the program to meet regulatory requirements.

MEMBER BARNES: Thank you. I think that helps. But you said that was in place since 2002?

DR. THOMPSON: Excuse me. The licence prior to the current licence had a licence condition requiring AECL to put in place a groundwater monitoring program specifically for the waste management areas.

MEMBER BARNES: Yes. What I didn't say in here were very much in the way of statistics about these plumes, so I recognize it's a problem when we are dealing with effluent or other things. There are some hard data in tables and in this document; there's nothing really in here in terms of the characterization of the plumes which

has been done on previous occasions but this is one of the key areas we are looking at here and the site-wide issues.

I'll leave it at that.

I'll just turn, if I could, Mr. Chair, to leaking tanks and 21 of these are identified. "A growing risk of leakage" is in AECL's statement here. Could you remind me, again, of your planning basically to replace this as a mechanism of storage but over what timeframe would you see all or most of these 21 tanks essentially being replaced?

MR. McGEE: Brian McGee, for the record.

I'll turn the question over to Bruce Lange to answer, but I'll start by just mentioning that we've just recently received environmental approval to proceed with the liquid waste transfer storage system and that project is fundamental -- is the basis of our remediation efforts for the remaining 21 tanks.

I'll turn it over to Bruce and he can elaborate further.

MR. LANGE: Yes. Bruce Lange speaking.

Yes, we have a very active program underway and, in fact, have had an active program for a number of years. As I'll indicate probably under additional circumstances that we very much rely on a risk-informed process for prioritizing what projects we undertake.

There are limited resources primarily in terms of human being talent, I suppose, and so we have to ensure that the resources we do have are focussed on projects that have a high priority. A number of years ago -- or maybe I should preface this. We go through a very formalized process of examining the priorities or establishing the priorities for the work that we undertake. Last time, we had about 25 or 30 people including CNSC staff and actually a consultant from the Idaho National Engineering Lab come up participate in our prioritization process. We take this very seriously and we put a lot of effort into it. That provides us a rating scheme and that rating scheme identifies what are the projects that we should undertake first.

A number of years ago, one of the primary projects was associated with the fact that we had these legacy waste tanks. There are 20 in total. The twenty-first is actually the FISST tank which is of a little bit different category but primarily it’s the 20 tanks, some of which were built back in the ‘50s. With the recognition that these tanks comprise an immediate issue that we had to take on, the Liquid Waste Transfer and Storage Project was put in place.

As Brian has indicated, we got the good news just the other day that we have the go ahead on now

really implementing this project. That project will see the transfer of all the liquids and a lot of the sludge from those 20 tanks to a centralized holding tank that's been built to current-day standards and located within controlled area 2.

The consolidation of those liquids is part of an overall plan to ultimately solidify those waste into a form suitable for disposal. The placement of those liquids into the intermediate storage tanks is not a departure from our original plan. We had always planned to consolidate those together by mixing them together appropriately. We can blend it so we have a good feed stream for whatever solidification process we use, but in fact this is on the path of getting those liquids solidified and into a form that is suitable for disposal.

There will still be some isolated conditions on the site -- or isolated circumstances on the site, where liquids will have to be disposed or have to be stored. Primarily those liquids are now being addressed as part of the Waste Treatment Centre upgrades so that we have come a long ways in addressing a primary issue, largely through the Liquid Waste Transfer and Storage Program to address the legacy waste, but also in the way that we have upgraded the Waste Treatment Centre and the way that we are now currently dealing with liquids. And

in fact, of course the plan with the molybdenum-99 production is that we won't be generating any liquid waste in the future, but in fact be generating solid waste as soon as we produce it from the production process.

So we have significantly altered the way that we deal with liquids. The legacies that you identified as part of AECL's past, has had an impact and we understand and through lessons learned, that we have to change our handling processes and that's what we've done through these projects.

MEMBER BARNES: So the question was how long. So now that you've got the ---

MR. LANGE: The tanks should be emptied within the next six years.

MEMBER BARNES: Okay. And you do know the nature of the chemicals in each of those 20 tanks?

MR. LANGE: In agonizing detail, yes. We have a ---

MEMBER BARNES: And there is no problem in having a central cocktail?

MR. LANGE: No.

MEMBER BARNES: A chemical viewpoint.

MR. LANGE: We've actually done some -- Bruce Lange for the record -- we've actually done some experiments in the hot cells where we've poured these

things together and in fact have confirmed that they are compatible with each other.

MEMBER BARNES: Thank you.

THE CHAIRPERSON: Thank you. Before I go to my next colleague; just one question I have as Chair, is that further to the excellent overview, I believe that Dr. Thompson has given with regard to the requirements under 7.12 licence condition, that CNSC require is it perfectly clear and would AECL wish to confirm that they agree with that licence condition? Because there was some concerns with regards to various licence conditions that may come forward. Do you agree with the observation that Dr. Thompson has put forward in that, that requirement can be met in the orderly time frame set out in Condition 2 -- Condition 7.12?

MR. McGEE: Brian McGee, for the record.

We're in agreement with the fundamentals of the licence condition and the principles behind it. This is an area of discussion that we would like the opportunity for some discussion on timeline. We want to make sure that we can manage our way to meeting that licence condition in a systematic manner.

I think what we've heard is that a large part of meeting it is, reporting and making sure that we have the right program elements from an auditability

perspective. We just want to make sure that we understand that completely and that we are able to manage it on a timeline that's acceptable to the CNSC and to ourselves.

THE CHAIRPERSON: But you are in agreement with the objectives as laid out by CNSC staff?

MR. McGEE: Brian McGee, for the record.

We are in agreement with the objectives laid out by CNSC staff.

THE CHAIRPERSON: Thank you.

I'll now go to Dr. Dosman.

MEMBER DOSMAN: Thank you, Mr. Chair.

I would just like to come back to the issue of uncontrolled releases. I think I heard Mr. Colligan state that uncontrolled -- something like, uncontrolled releases not monitored may be greater than controlled releases. And I'm just wondering whether CNSC staff or Mr. Colligan would be prepared to elaborate further on that statement?

MR. HOWDEN: Barclay Howden speaking for the record.

I'm going to ask Gerald Crawford to respond to your question.

MR. CRAWFORD: For the record, Gerald Crawford, Environmental Program Specialist.

The difference between uncontrolled and

controlled releases, I think does need clarification. I think if we talk about the controlled releases, AECL has a number of treatment plants onsite, where they treat their operational liquid waste and they're very effective.

When we look at their -- the doses to critical groups, from their releases from their treatment plants, which all go into the river, the doses are very low and they're well documented.

Now, when we look at the information that's reported to us on leaks into the ground, the releases into the surface waters from plumes, they themselves are -- the releases from the plumes to the ground and -- sorry, to the surface waters are very -- are monitored and documented. The releases from leaks into the ground are not clearly documented at the moment.

What we're trying to do is, we're trying to separate out the controlled release information from the uncontrolled release information, so that we get a much better picture of actually the source term. And at the moment we don't have a picture of the source term. We have a picture of the plumes, the releases to surface waters and some information on individual leaks.

We need to get a much clearer picture of the source term, so we can then predict whether or not we have a problem that may get worse or it may just stay at

the same level or get less.

And so we're quite keen to separate these two issues and I think AECL will accept that this is a reasonable thing to do. I think they have some issues that they will have to discuss to us about how they go about doing this. Because it's a change over the last decade on how they're going to report their discharges.

MEMBER DOSMAN: Mr. Chair, I wonder if I might ask AECL if they would be willing to comment on this issue?

MR. McGEE: Brian McGee, for the record.

We're in agreement with CNSC staff on this issue.

The controlled releases are basically the result of ongoing operation and we believe that we're doing a good job of monitoring and controlling those.

The uncontrolled releases are primarily legacy issues and characterizing the source term is an objective that we share.

MEMBER DOSMAN: Mr Chair, may I ask, do you have any kind of timeline in mind to fully grapple with this issue?

MR. McGEE: Brian McGee, for the record.

I'll ask Bruce Lange to share the timeline.

MR. LANGE: Bruce Lange speaking.

The issue around the way in which we address the plumes, is a complex issue. And the timeline is dictated in many circumstances by the nature of the issue that we're working with.

If we have a situation where there is a source term and that source term is very discreet, well-characterized; we know that it is indeed having a significant impact on the environment; we know that we're not going to be dosing our people up by working with this material and that we indeed have a place to store and ultimately dispose of it, then the timeline is very short. By short, I mean we do it immediately.

We are doing this with some special burials now that we have identified as being problematic and in fact, we have and are planning to accelerate the removal of these particular source terms from the ground. So what Gerald is saying is very reasonable.

In other cases, we have well-defined sources that are discreet, well-understood, but in fact they don't and aren't causing impacts on the environment. In this particular case, because the priorities are lower, those source terms will be left in place and monitored in order to ensure that the resources that are required to handle the higher priority items are indeed taken on.

The third case is where we have source

terms that are large, disperse, that we don't yet have -- we haven't yet identified where this material clearly should be stored because you may be dealing with thousands or hundreds of thousands of cubic metres of waste or where there's real issues around the extent to which we might expose our staff to doses or, in fact, cause environmental releases by the process of digging it up.

In those circumstances where the removal of the source term is not practical, then we have adopted the strategy of treating the groundwater and removing the contamination as it's released from those source terms. This doesn't mean that we aren't going to extract it. It doesn't mean that we aren't going to monitor it, but it simply says that the best practice, the ALARA practice, if you will, is to treat the groundwater and remove it that way.

So the timeline is variable. It depends upon the nature of the source term, the impact that it's having on the environment, the extent to which we can deal with it and examinations of such things as the ALARA principle.

MEMBER DOSMAN: I wonder if I might ask CNSC staff if they have any comments on what we've just heard?

MR. HOWDEN: Barclay Howden speaking. I'm

going to ask Gerald Crawford to comment.

MR. CRAWFORD: For the record, Gerald Crawford.

I'm aware of what AECL are doing and I think that they have done some mitigation and treatment of some of their plumes in the past and they've been quite successful.

I think the main issue is we're focusing on the difference between controlled releases and uncontrolled releases because in the Act and Regulations, we feel that we should be doing this quite clearly, that there is a significant difference between a controlled release and an uncontrolled release when it comes to calculating dose to the population.

Historically, AECL have taken the releases to surface water and then added them to their critical group doses.

And so we want to really clarify all the uncontrolled releases from the controlled releases, and these not only include the historical waste, but any leaks from any operational plants as well. These are themselves uncontrolled releases and they must be properly documented. So we understand the source terms are going into the ground in the current timeframe rather than with the historical -- the historical legacy wastes.

MEMBER DOSMAN: So, Mr. Chair -- so in the process of licensing, how big -- may I ask CNSC staff; how big an issue is this? Is CNSC staff confident that AECL is handling this issue in the most practical and responsible manner?

MR. CRAWFORD: For the record, Gerald Crawford.

When we look at the scale of the problem, I think we need to be careful, clearly, first of all, that the doses -- the discharges from the site as a whole do not cause any significant dose to the downstream critical groups.

And so the overall impact that we're seeing today and in the past five years over this licence period, the critical groups have not had a significant dose from the liquid discharges. So that gives us quite a lot of confidence.

The issue is are those doses going to remain constant or could they get worse or will they tail off? And we're not really in a clear position to say that they won't get worse because we have no definitive information on the source term; hence the emphasis on a groundwater monitoring program.

The other issue is there are some individual leaks from operational vessels and parts of

plants that we really need to understand what the size of the source term is so that we can then make that similar risk-based assessment as to how we need to respond, as regulators, to it so that we can make some judgments as to the amount of regulatory effort we put into it.

MEMBER DOSMAN: Mr. Chair, it relates to this question; then perhaps I can leave my other questions to another round, with your concurrence.

THE CHAIRPERSON: Okay.

MEMBER DOSMAN: Is CNSC staff confident that AECL is taking the necessary steps to provide the information that you've indicated is required?

MR. CRAWFORD: For the record, I think so, yes, except that some of the source term information will take a long time to generate. I think that they probably have more information available to them than they have historically passed on to us, and I think part of the environmental monitoring program that we're asking them to produce will go a long way in identifying source terms and the risks that may be present that we are both not yet aware of.

MEMBER DOSMAN: I'm sorry to prolong this, but I would like to come back to AECL, with your permission.

Is AECL confident that it will be possible

to provide the kind of information that has been outlined as being necessary to predict the future of ---

MR. McGEE: Brian McGee, for the record.

We're in agreement with CNSC staff's view that there's a need to characterize the source term.

Bruce Lange, in his comments, emphasized that we are planning to do that. We have already done it in a number of areas. We're planning to do it in other areas. We need to factor in the full scope of the work involved, which includes the impact on the safety of our workers.

So for example, building 240, Tank 1, the sediment in that tank is a source term issue and we intend to remediate that, fully characterize it and remediate it, but we need to undertake to do that in a manner that protects the safety of our workers. So that's fundamentally one of the issues in terms of defining the timeline.

The other issue is, again, as Bruce indicated, is applying our resources in a risk-informed way. So we're in agreement and it's just a question of establishing a program that we're able to effectively manage to meet the requirements of -- our requirements to assure ourselves and to assure staff that we have the source term adequately characterized.

If there's information staff needs in this area, you know, we generate a large volume through our operations of material and it would be inappropriate to swamp staff with information, but if there's any information staff need that we are in possession of, it's available to them upon request.

MEMBER DOSMAN: Thank you.

THE CHAIRPERSON: Dr. McDill.

MEMBER McDILL: Thank you.

I have several questions relating to CMD 06-H9.1E, the radiological environmental survey.

THE CHAIRPERSON: Go ahead, Doctor.

MEMBER McDILL: I'm just waiting for the paper to stop flipping.

My questions relate to 3.1, "Radioactivity in Air" and 3.2, "Radioactivity in Water".

With respect to the radioactivity in air, there was a statement that:

> "The results do not differ markedly from those of '99 and 2000."

There is some indication of a level of confidence in the Table 2, a 95 per cent level of confidence reporting air.

But my question was has a proper statistical analysis been done to make that statement a

true statistical statement that the results do not differ markedly, or is that just an observational statement?

That would be my first question.

MR. McGEE: Brian McGee for the record.

I'll ask Ray Lambert to answer that question.

MR. LAMBERT: For the record, my name is Ray Lambert. I'm the Director of Safety and Environment.

The Laval Study, which is a document you're referring to, is a study undertaken by Laval University to do a random survey of areas in the vicinity of Chalk River, the results of which we can compare back to our results and to assess the validity of our results.

It is our understanding -- the answer to your question is yes, that the author of the study has taken his sufficient analysis of the data to make the conclusions he made, but I am relying strictly on what I'm reading in the document as well.

MEMBER McDILL: Does staff have a position?

MS. THOMPSON: Patsy Thompson for the record.

This is a study that is done on behalf of AECL. It's not a regulatory requirement, and we have not analyzed the study or the number of samples that were taken, or the statistical analysis that was done with it.

So we can't comment on the quality of the work.

MEMBER McDILL: Thank you. That makes my next questions more challenging.

Perhaps I could ask AECL to comment on why the comparison has been made to Swiss industries as opposed to Swedish industries, French industries, British industries, because that seems to be part of the support of the information?

MR. McGEE: Brian McGee for the record.

I'll ask Ray Lambert to address that question.

(SHORT PAUSE)

MR. McGEE: While Ray is getting ready -- Brian McGee for the record. While Ray's preparing the answer, if there is an interest in confirming the statistical basis for the study, we can provide that by Day Two.

MEMBER McDILL: Thank you. I'm sure Commission members would appreciate that.

MR. LAMBERT: Ray Lambert for the record. I apologize for the delay. I just wished to confirm my understanding.

There is no particular reason why one comparison was chosen over the other. We left it to the author of the study to make the best choice that they felt

appropriate.

MEMBER McDILL: Perhaps, while you're verifying the statistical nature, you could inquire as to why Swiss industries as opposed to other industries.

I'll move on to another CMD I think. In 06-H9-3.8.1, solid radioactive waste, I wonder if I could ask AECL to address the issue of no identified contingencies beyond 2010 for the continued safe storage of solid radioactive waste in waste management area B?

MR. McGEE: Brian McGee for the record.

I'll ask Bruce Lange to address that question.

MR. LANGE: For the record, Bruce Lange.

Yes, this is a very crucial issue, not only, I'm sure, in the eyes of the regulator but also to AECL. If we don't have sufficient waste managing capacity to deal with the waste at the CRL site then of course programs would not be able to be carried out. So it is a primary focus of waste management and operations and myself to ensure that we are properly predicting the usage rates and in fact the capacity that's left.

So with this in mind, and as referred to by Mr. Colligan, we did prepare an analysis, and I can give you a bit of a summary as to what that analysis revealed.

What we did is to systematically look at

the rate of waste generation. This was based on examining our annual reports and published figures as to how much waste of various types are going into various facilities. Those facilities are primarily of two types. They are what we call the tile holes and also bunker space.

The analysis was done to be what we would call realistically conservative, and that is that we did not untowardly have unreasonable expectations about such things, for example, as regulatory approvals. We know that expanding waste management areas is not a trivial undertaking and it takes many years in some cases to do that.

We also did not take any credit for processing the waste, incinerating the waste, further compacting it, et cetera, so that we simply compared our waste generation rates against the capacity that we either have in place now or will have in place by virtue of additional facilities being built, for example Powhill or A30.

Our conclusion was that there is indeed ample space for the next six or seven years, based on these realistically conservative assumptions for dealing with the waste streams that are now associated with and anticipated for the Chalk River site. That includes the NRU fuel. It includes Maple fuel. It includes

Molybdenum-99 waste, and it includes low and intermediate level wastes that are generated on the site. So the result of our analysis shows that we do indeed have space to manage the waste that's being generated over the licensing period.

We did recognize and do recognize that there are areas where you're going to have to address in the future. For example, going over to a new type of storage for fuel, what we call a New Dry Storage System. So we have currently, in effect, earned this second year of a project to develop a new methodology for storing used fuel and other high level waste that will not rely on the use of tile holes.

The third component is that with the shielded nodular above ground storage, that will give us a capacity for 20 years. So we have enough space right now and will have enough space based on current construction to last through the licensing period.

In addition to that, the SMAGS, the SMAGS facility will give us room for low-level and intermediate-level waste for the next 20 years, and we are actively pursuing alternates to tile holes so that that will give us more than enough storage space conceptually -- I mean, based on that concept to carry us well into the future.

So it's our position that the topic or the

issue of waste managing capacity is being proactively looked at by AECL and the story looks -- not the story, the results look promising.

MEMBER McDILL: As staff raised the concern in their presentation, perhaps they could respond.

MR. HOWDEN: Barclay Howden speaking for the record.

I just wish to reiterate our concerns that were outlined there about the tile holes and the SMAGS. Our understanding is that we will be receiving the assessment that Mr. Lange was talking about and we might be able to give you an update for Day Two. But the major concern we have is rated generation and space available.

On the SMAGS Project, this one is a critical path item right now and the intention -- we're putting a lot of regulatory effort against this, such that the Commission will be able to consider an EA Screening Report and a construction application in a very short period of time.

Thank you.

MEMBER McDILL: Thank you.

One more with respect to waste management area C that's closed except for the reception of de-watered sludge and animal carcases. Animal carcases seem a small thing in the huge site, but where are they going

after July 31? I assume we're not talking about a huge number.

MR. McGEE: Brian McGee for the record.

The animal carcases really fall into three categories. There are animal carcases that are just from the wild, dead animals from the wild that need to be dealt with on any site of this nature, this size.

We have animal carcases that are sent to us by other institutions within Canada that have been used in research, and we have carcases that are used within our own research facilities.

The first category will go into sanitary waste storage. The next category from other institutions will be -- they've been -- we've written to them. We've indicated that we won't be able to accept them any longer, and it's been indicated to them that they'll have to find alternate means.

And finally, our own, are going to be stored on-site in appropriate storage, frozen basically until we come up with an alternative means of disposal.

MEMBER McDILL: Roughly, how many cubic meters of frozen carcass are we talking about?

MR. McGEE: Brian McGee for the record.

I'll ask Bruce Lange to address that question.

MR. LANGE: Thank you, Brian.

It's not large. I mean primarily the animals that we're talking about are the results of the -- we have this biological research facility where we use rats. So the animals are primarily rats. So we're not talking about large quantities. They are the type of thing that one of two things can happen. We can either store them, freeze them, put them in freezers. The other alternative is simply as they used to do in the old days, lime them down, which would cause accelerated decomposition until they are at the point that they're just nothing but essentially inorganic matter. So the issue is not significant.

MEMBER McDILL: Staff agrees the issue is not significant?

MR. HOWDEN: I'm going to ask Don Howard to comment on that.

MR. HOWARD: Don Howard for the record.

Essentially, the animal carcasses in waste management area C were basically directing ground burial. So we had asked AECL to cease that operation as of July 31st of this year, at the end of the current licence. That provided them sufficient time to inform their clients that they would not be accepting anymore animal carcasses.

So far, we haven't seen any proposal from

AECL as to what they will be doing with the animal carcasses that they currently possess. So basically, we can't comment right now. We haven't seen any proposal with respect to that.

MEMBER McDILL: Thank you.

THE CHAIRPERSON: I just have a couple of questions before we go to round two and I don't think it's appropriate to go for lunch right now with talking about animal carcasses and rats but anyway ---

(LAUGHTER)

THE CHAIRPERSON: So my question before I go to round two is with regard to the Laval study, we went through the various examples that were given there, but I couldn't find any place or I didn't see it -- maybe it was there -- where it showed improvements over the data. Were there any -- has there been any correlation between past studies and these to show whether there has been any improvement or anything that has deteriorated over the period of those -- from the last studies that were done, whether they were done in-house or not?

MR. McGEE: Brian McGee for the record.

I'll ask Ray Lambert to address that.

MR. LAMBERT: Yes, Ray Lambert for the record.

The purpose of the Laval study is to have a

third party do random sampling of environmental aspects of areas in the vicinity of Chalk River that we can compare against our own data that we put into our annual reports, sort of as a third party verification of our own analysis.

The Laval study only went so far as to say that there was no significant change from the last study they did back in, I think, 2002. I've forgotten the specific date. They didn't go any further than that in the study. We have not analyzed the Laval study any further than that ourselves at this moment.

THE CHAIRPERSON: A question then to CNSC staff. Have you done any comparison with the 2002 study and the Laval study to see if there was any improvement or any deterioration in some of the tests that were done or any of the tests that were done?

DR. THOMPSON: Patsy Thompson for the record.

Staff hasn't analysed in detail the report provided from the Laval study, the current one nor the past ones. The reason is we use the Environmental Monitoring Program results that AECL gathers. That is a well-designed program which we have approved and is a licensed condition. The Laval study is done by -- on behalf of AECL by someone that is independent.

As Mr. Lambert mentioned, the samples are

taken randomly and so we have essentially no information on program design, how the samples were chosen and for what purpose. So to us, it doesn't really provide a lot of information in terms of trending but it does confirm that the environment around the Chalk River site is not heavily contaminated and that essentially confirms the monitoring results that AECL gathers.

THE CHAIRPERSON: Thank you. So just a follow-up question. You're not going to be doing a trending analysis or anything on this?

MS. THOMPSON: Patsy Thompson for the record.

No.

THE CHAIRPERSON: Thank you. Just a question of clarification with regard to the description of the site. At the outset, you talked of 160 buildings on 40 hectares of land, but then when I read on the document, control area 2 under high security, 20 hectares; control area 1, 27 hectares; and WMAs, another 28 hectares.

The entire site is more than 40 hectares; is that correct? I mean it would be 40 plus the other related areas. Is that correct? It talked about a 40-hectare site but the control area number 2 which is high security is 20 hectares, but then -- could you just give

us an overview of exactly the size of the site?

MR. McGEE: Brian McGee for the record.

Yes, the site is considerably larger than the descriptions associated with control area 1 and 2. There's an outer area of the site and the total area I believe is 980 hectares. I think it's still probably wrong. In terms of acres, it's around 10,000 acres.

THE CHAIRPERSON: Question with regard to the uncontrolled release of tritium into the environment. I guess my first question would be to CNSC staff.

Is there exact measurements or measurable of how much tritium through plumes or through airborne or however it might be is reaching the Ottawa River? Has there been an analysis of that over the years as to whether that's changing upward, downward, or remaining static? Could CNSC staff just give me an overview of how much tritium or the trend of which tritium may be reaching the Ottawa River?

MR. CRAWFORD: For the record, Gerald Crawford.

The tritium levels in the Ottawa River are low and they are remaining constant. By low, I recall that in the mixing zone where the process sewer -- on the edge of the mixing zone where the process sewer goes out into the Ottawa River, I believe it's about 4 becquerels

per litre, which is way below the 7,000 becquerels per litre for the drinking water, the Canadian drinking water standard.

THE CHAIRPERSON: It's 4 becquerels per litre there but what is the reading upstream above the site? Has there been monitoring done there also to see how much relates to the CRL site?

MR. CRAWFORD: For the record, Gerald Crawford.

The records are taken above the stream on a regular basis and I cannot recall and I don’t have the data in front of me to supply that information. AECL may have that information.

THE CHAIRPERSON: Does AECL care to comment?

MR. McGEE: Brian McGee for the record.

I’ll turn that over to Bruce Lange.

MR. LANGE: For the record, Bruce Lange.

Yes, there are two major watershed basins at the Chalk River site. One is called the Perch Lake Basin and the other one is called the Maskinonge Lake Basin. We record, as a result of tritium releases from the waste management areas, the flux of material going into those basins. Those are reported on an annual basis in the Waste Management Area Annual Safety Report and in

looking at the data from 2001 to 2005, out of the Perch Lake, the concentrations have stayed approximately the same over that five-year period and the same applies for the Maskinonge Lake Basin.

Looking further inwards on the site itself, Perch Lake, which is a receiver of a lot of the Tritium that comes out of the old waste managing areas, is at about 13,000 becquerels per litre.

That is about twice the drinking water standard of 7,000 becquerels per litre.

However, we have seen a significant reduction in the about of tritium going into Perch Lake as a result of the cessation of the discharges to the liquid dispersal areas resulting from the upgrades to the waste treatment centre.

So we are already beginning to see very real and identifiable improvements in the water quality. And, in fact, I think its down at around 10,000 becquerels per litre as a result of the cessation of those practices. We have not discharged to the liquid dispersal areas since February of 2000.

THE CHAIRPERSON: I have one further question because I know Day Two there will be new information. But with regard to tank leaks, we heard -- one place I read I think it was between 558 and 800 litres

per day; other place I've read different ones, and this morning we heard it was one litre per minute. Just a quick calculation, that would be over 1,440 -– or around 1,440 litres per day if you figure one litre per minute.

What is the actual leak and how close are you to determining the source of those leaks?

MR. McGEE: Brian McGee, for the record.

So I understand from your question you're asking about the leak rate from the NRU rod bay. That work is ongoing. We've d one fairly extensive investigation at this time. I'll turn it over to Bill Shorter and then give him an opportunity to elaborate further.

It may be a bit difficult at this point to give you a hard timeline for when we think that we will identify the actual leak, but we believe we have a systematic plan in place to isolate where it is coming from. And the actual number in my recollection is it's half a litre per minute. So I'll turn it over to Bill Shorter.

MR. SHORTER: Bill Shorter, for the record.

We have conducted two separate measurements on the actual rod bays to determine, basically, a mass balance of water in and water out, taking evaporative loss rates. The second more comprehensive measure estimated

the leak rate, or the loss rate, to be about 600 litres per day plus or minus 100 litres. So if you take the figure, and I believe I've rounded a bit -– about 800 litres a day would equate to about half a litre.

In terms of what are we doing to pursue the source, we've spent considerable effort developing tooling that will allow us to do leak searches of the surface area of the rod bays. That tooling has been developed. It's a camera and dye technique. We have begun the inspections within the bays.

To date we have not found any potential crack or leak source identified through this technique. It's a fairly extensive area. So we have a fair bit more area to go through. We've also provided a plan and schedule to staff that shows that inspection going on several more months to cover the entire rod bay.

THE CHAIRPERSON: Does CNSC staff have anything further to comment on that?

MR. HOWDEN: Yes, Barclay Howden speaking.

I'm going to ask Dr. Ben Belfadhel to comment on the review of the plan.

THE CHAIRPERSON: Thank you.

DR. BELFADHEL: For the record, Ben Belfadhel.

This is just to confirm that we received

the plan and we are in the process of reviewing it. And we haven't identified, so far, any major issue with the proposed plan.

Thank you.

THE CHAIRPERSON: Okay, we'll go to round two, Dr. Barnes.

MEMBER BARNES: A few brief questions, really. On table 3.5 on page 54 of LP002, that's the main AECL document, the table is the "Summary of Radiological Emissions from CRL 2000 and 2005". Could we just be assured that, for Day Two, we'll get the not available data in those two NA items?

MR. McGEE: Brian McGee, for the record.

I'll turn it over to Ray Lambert. We're able to supply that information to you now.

MR. LAMBERT: Ray Lambert for the record.

I apologize for the delay. We just had the number calculated yesterday.

MEMBER BARNES: I can ask more questions. You can come back if that's useful.

MR. LAMBERT: I'll look it up and have it for you in a minute.

MEMBER BARNES: Right. There are significant emissions which I'd just like to address. One is the argon-41. Is there any way which that can be

significantly reduced over the next decade from what it is at the present time?

MR. McGEE: Brian McGee, for the record.

I'll turn it over to Bill Shorter. We are, and Bill can elaborate on my response, but we are looking at ways to reduce the argon-41 emissions and we're undertaking ALARA-based studies to do that. I'll turn it over to Bill and he can elaborate.

MR. SHORTER: Bill Shorter for the record.

As the Commission may remember, we had previously completed an ALARA review of the argon-41 production. That review resulted in a number of recommendations, a number that certainly appeared feasible and implementable in the short term. They would be focus-based on the calculations for the production, on areas that we estimate account for about 40 to 50 per cent of the argon production.

The other recommendations which relate to the roughly other 50 per cent would relate to major changes to the reactor structure that one would contemplate if you were carrying out a major refurbishment of the facility.

So if I can comment on the areas where feasible changes in the near term were recommended, three main areas. One was to look at the redesign of some

shielding plugs that are used in this structure. The other two were to study the feasibility of first eliminating some air spaces between sections of the graphite, and the second was to look at the feasibility of installing a gas purge system in our horizontal through-tube that runs from one side of the reactor vessel to the other.

I can report at this point that the liner shield plug design has been finalized and we're in construction stages. So we would expect to move ahead with implementing that change within this year.

The engineering feasibility studies on the other two areas have been completed. The conclusion of the engineering is that both appear feasible.

We're into the detailed planning and cost estimation stage at this point requiring us to, you know, assess of making the change essentially meets the definition of what would be ALARA to implement. I would expect that we would have that completed information on the detailed design and costs in this calendar year.

MEMBER BARNES: And if all three were implemented, the five-year average figure for argon-41 is 9.6 per cent of the DRL. What would that lowered to? Do you know? What proportion of argon-41 would be -– how could you express that in terms of the level of reduction?

MR. SHORTER: Bill Shorter, for the record.

I believe that would be rather speculative on my account. Given that the releases from those sources are in that 40 per cent range, you can expect some fraction of that, but the calculations of the exact production areas aren't good enough to, I think, give you that firm number.

MEMBER BARNES: So you've made the expenditure without knowing what the benefit was? Surely not? I'd be happy to wait all day, too, for an answer.

MR. McGEE: Brian McGee, for the record.

We'll provide further information in this area for you on Day Two. Sometimes in the ALARA studies like this there are assumptions made and so that will be the basis for making the investment.

If I may, going back to your previous question, we do have that data and so I'll share it with you now, if that's okay.

So for 2005, total effective dose 0.086 and the next row down for liquid dominant pathway the number is 0.018.

MEMBER BARNES: If I could turn the page, then, to Table 3.6, and that's the non-radiological airborne emissions? Again, this has come up, I think, on a previous licensing issue.

So again, my question is there are significant emissions particularly on the NOX S02 and CO2. Presumably, this is as a result of a particular fuel type that you're doing. Is there any way that you can reduce these values, again, significantly?

MR. McGEE: Brian McGee, for the record.

I'll ask Ray Lambert to answer.

MR. LAMBERT: For the record, Ray Lambert.

You're correct. There is a certain factor that is associated with the fuel type we are using, No. 6 fuel oil.

There has been numerous initiatives undertaken over the last several years to try to improve our efficiency and reduce the numbers. For example, we have upgraded our boilers back in early 2000. We've been taking measures to improve the energy efficiency of many of our buildings onsite ranging from demolishing, as you saw in two photographs, old redundant buildings that are being decommissioned and the new facilities we are building are being built with more modern standards in terms of R-value.

The numbers you're seeing are not terribly unlike another industrial complex about the size of Chalk River. We are comparable to other industrial complexes.

MEMBER BARNES: The next figure, 3.7, the

2005 figure seemed to be a little anomalous. This is the ”exceedences of monthly guidelines for non-radiological liquid effluents” which seem to be tracking downwards into a one to two or four. You implemented an annual target in ’03 which you’ve, I guess, tried to lower, but ’05, the actual number is twice the target. Is there an explanation for that?

MR. McGEE: Brian McGee, for the record. I’ll ask Ray Lambert to answer.

MR. LAMBERT: Ray Lambert, for the record. I apologize, but it slips my memory as to why we’ve had it and I’ll have to confer with Jim Bond who is behind me who may have the information.

(DISCUSSION OFF THE RECORD)

MR. BOND: Jim Bond, AECL Environmental Protection Program Manager. Could you repeat the question again, please?

(SHORT PAUSE)

MEMBER BARNES: April 3, ’07 and the figures is for exceedences and monthly guidelines for non-radiological liquid effluents on page 56 and everything was trending down nicely. You were lowering the target and the exceedences were also getting lowered, but the 205, the exceedences have increased from low twenties up

to thirty and the target had been dropped from 20 down to 14. I read that as a significant failure to meet the target. I wondered why there was a particular anomaly there in 2005.

MR. BOND: I'm sorry. I'll have to come back on Day Two on that one.

MEMBER BARNES: Okay.

One more, Mr. Chair, and that's the SMAGS, and I guess we'll hear more about this in a panel tomorrow, but on Figure 3.2.1 on page 80 of your main documents, LL002, you show the conceptual layout for the SMAGS at Waste Management Area "H". This is placing the six buildings in almost very close proximity. They are made of reinforced or strengthened in concrete with strengthened -- a concrete floor, concrete walls, concrete roof and they are filled pretty well to the brim with compacted material and steel things.

Has there been adequate geotechnical work to be assured that this level of loading, that it doesn't cause any particular problems in this particular area or is that yet to be done?

MR. McGEE: Brian McGee, for the record.

I'll ask Bruce Lange to answer.

MR. LANGE: For the record, Bruce Lange.

Yes, seismic analysis is a fundamental

component of the design process.

I'll also note that Area H is characterized by a very large rock, bedrock close to the surface so that in many cases the foundations are very close to the bedrock surface. So it's fairly well suited for the site. But I must very much stress that as part of the safety analysis that's done in support of building these facilities, questions around seismic analysis, shielding releases, et cetera, forms a fundamental component of that safety analysis.

MEMBER BARNES: And you mentioned that there's only a minor amount of -- I'll call it liquid effluent or things from within the buildings is expected, mainly from condensation and so on, but is there any intent to have hydrogeologic network around here for monitoring the site as a whole?

MR. McGEE: Brian McGee, for the record.

I'll ask Bruce Lange to answer.

MR. LANGE: For the record, Bruce Lange.

Yes, very much so. As part of an enhanced Groundwater Monitoring Program we are going to be adding additional groundwater sampling wells in and around Area H and also moving to other areas such as Area G which is somewhat contiguous with Area H.

MEMBER BARNES: That's all, Mr. Chair.

THE CHAIRPERSON: Dr. McDill or ---

MEMBER DOSMAN: Just for staff, I think I heard staff say that AECL does not have a nuclear criticality safety program that meets international standards and I'm just wondering if staff would be willing to enlarge on that statement.

MR. COLLIGAN: Lawrence Colligan, for the record.

That statement is correct. What is presently in place and has been indicated in our CMD, there are individual documents for each facility. As a matter of fact, there are more than one document per facility. Actually, I think we have about 43 CSDs for the total of our licensed facilities.

Each criticality safety document is operated in a facility maybe differently from another. So the intent of the licence condition that we are proposing in the draft licence is to require AECL to bring these criticality safety documents up to date in accordance with the ANSI standard. That being said, we believe the first step in doing so would be to produce a document which would require AECL to put in one document all of the CNSC approval requirements, and once we have agreed with that document, to develop other documents in line with the ANSI 8 standards which would be adapted for the purposes of

each facility. So it would be a general document on criticality safety where the conditions, the requirements, cannot be changed by the licensee and all the additional requirements for each individual facility would then be added to this for an individual criticality safety document at that point, in line with the appropriate parts of the ANSI-8 standards.

MEMBER DOSMAN: Okay. Thank you, Mr. Chair.

I wonder if I might ask AECL to comment?

MR. McGEE: Brian McGee, for the record.

As we mentioned earlier -- I'll turn this question over to J.P. Létourneau to elaborate on if he chooses to, but as we mention in our presentation and in earlier discussions, we do have criticality safety processes in place. We are in agreement with staff's position that we should have a program document that is an approved program document as well as local facility criticality documents that are suited to the facility and are able to be revised as required.

It's consistent with the performance levels that we want to achieve and it even goes beyond that to some extent; a lot of focus in the nuclear industry today around overall reactivity management.

So that takes you, again, to a lower level,

and fundamentally that's where we'll strive to go. So we're in agreement with staff's position on this.

I will ask Jean-Pierre Letourneau to elaborate, if he chooses.

MR. LETOURNEAU: Thank you very much, Brian. Jean-Pierre Letourneau for the record.

As Brian indicated earlier in his presentation, criticality safety has been developed over decades of safe handling of fissionable material at CRL and we've developed interesting processes to make sure that there's no criticality safety issue.

We do have a panel of experts that are recognized internationally that have been working with the various facilities on site to make sure that we have very adequate safety or criticality safety practices.

One thing we've done in 2002, we've hired an expert, an American expert who is also the Chairman of the ANSI 8 Standards to come and verify whether or not our practices were acceptable, and he did tell us that we meet the standard. So we have no problem complying with the CNSC requirement to develop a nuclear criticality safety program that meets the standard because we're confident that it does presently and we're just going to modify our documentation to make sure that everything lines up.

MEMBER DOSMAN: May I ask AECL, will it be

possible to do that by Day Two or have a reasonable plan in place to do it by Day Two?

MR. McGEE: Brian McGee for the record.

Our understanding of the proposed licence condition is that there is a transition period associated with it, and so I think that would address your question.

THE CHAIRPERSON: It's now 12:42 and I think perhaps it would be appropriate to break for lunch. So we will break and come back at 1:40.

--- Upon recessing at 12:42 p.m.

--- Upon resuming at 1:40 p.m.

THE CHAIRPERSON: As we had indicated this morning, we were working by theme, and I would like to proceed with Theme 3, including comprehensive preliminary decommissioning plan, conventional health and safety, public information programs, radiation protection and licensing period. This could cover all other remaining matters except NRU, and I will ask Dr. Dosman to start.

MEMBER DOSMAN: Thank you, Mr. Chair.

I have some general questions and then I have a specific question. A general question is for Mr. Van Adel on the issue of safety culture, and I'm just wondering if you would be willing to describe for us the way in which your Board handles safety culture and transmits it down the line to the people at Chalk River

and so on.

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

The Board of Directors of AECL are quite involved and well informed regarding the day-to-day activities that take place across the company, but at Chalk River in particular.

We have a governance model which has a specific committee of the Board, the Science and Technology Committee of the Board which receives ongoing status reports regarding activities at the site. And in addition to that there's a robust governance model.

But specifically to respond to your question, the idea of improving the safety culture as part of an overall transition program across the company was initiated almost two years ago now, identified as a top corporate priority in last year's corporate plan that is ending in 2005, and the specifics of how that program would be implemented and rolled out were outlined in some detail, not only in our corporate plan but in the operational plan that the executives, including myself, were held accountable to the Board for.

So the high level tenants of the safety culture were laid out for the Board and approved by the Board and then regular reports are received on our progress, and we've augmented that, as I say, by an

overall cultural change program and used outside consultants to assist us in driving the framework forward.

So the safety culture was one of four key change pillars, if you will, that we identified in the company that needed to be addressed.

And the idea that we had, and Brian, when he came in, certainly contributed a great deal to how do you actually go about getting it done.

You know, one of the fundamental tenants of the change program is that if you get health and safety right, if that becomes inbred in your culture and if every employee in the company understands and embraces it, that's a good entry point, if you will, to build quality and the other processes in your company. If you don't have that right, you're not going to get the rest of it right.

So I think the Board really has not only embraced this but has continued to emphasize it by asking for ongoing reports from management and holding me and the other executives accountable for our performance against real objectives.

MEMBER DOSMAN: Thank you very much for that description, Mr. Van Adel. I am convinced that safety culture starts at the top and it goes down and it sounds like AECL has been paying considerable attention to

this issue over the last two or three years.

MR. VAN ADEL: Yes.

MEMBER DOSMAN: Thank you.

I would like to, Mr. Chair, go on and ask, at the Chalk River site, obviously it's a, as has been indicated, complex site. It strikes me as a site of many workplaces within a workplace.

I'm just wondering how well the Occupational Health and Safety Committee or the occupational health and safety structures work within that kind of diffuse organization? Obviously, it's not like some other workplaces where you might have several hundred people all working in the same job, the same work culture and so on. I'm just wondering if you would describe for me how you're managing the input of employees and management together and so on, professionals, in the management of traditional and radiological health and safety?

MR. McGEE: Brian McGee for the record.

We have what's called a Site Safety and Health Committee and it's similar to the Joint Health and Safety Committees that you see in other organizations. So we have representation as a slice of management and a slice of the worker population across the organization, union representation as well. It's a fairly large

committee. They have a managed process for managing their meetings, for tracking actions.

I've met with them on one occasion. I had a lunch meeting with them so I could hear firsthand any concerns that they had.

We have the Chairman, the Management Chair of the committee, joins us at our Operational Safety Oversight Committee right now on a regular basis. That's partly to give him a sense so that he can go back and represent to the SSHC, as we call it, what senior management is doing in terms of applying oversight to safety-related issues on the site, as well as to give us a connection directly to the SSHC. That's not necessarily a common approach, but we find, to this point, it's a very effective approach and we value that link.

MEMBER DOSMAN: On the organizational chart I was looking for how occupational health and safety related up to you as the, if you like, the CEO on site, and I couldn't tell from the organizational chart. I was just wondering -- I was a little surprised it wasn't on there. I was just wondering how that process does relate to you, to senior management?

MR. McGEE: Brian McGee for the record.

At this time, Occupational Safety and Health Manager, the person responsible for the program

definition, if you want, on site has a hard-line relationship, reporting relationship, to the HR organization centrally at a corporate level.

One of the changes that we're making with the organizational structure that we showed that will enhance our connection to the occupational health and safety program is that that individual, that position, is going to have a dotted line relationship to the Nuclear Programs Senior Director that we have in the organization.

So we're bringing occupational safety and health closer to the organization at a program level and we believe that that will give us greater opportunity to influence the direction on a day-to-day basis to get us the results and the outputs that we need from the program.

But what I would say to you is that occupational health and safety, I'm the Occupational Health and Safety Manager for the site and my leadership team all our occupational health and safety managers for their respective organizational units. Because it's critical to our success, that we have that mindset as part of a safety culture that Bob alluded to, that we have that mindset consistent throughout the leadership organization and then fundamentally right to the workface, that all of us are responsible for safety and that leadership of the organization have the responsibility for safe operation.

MEMBER DOSMAN: Thank you for that explanation.

I'd just like to ask a specific question and it refers to the Laval report. It might have come up in the environment but I thought it might also be health.

On Table 9 of the Laval report, there's some measurements of tritium in milk samples on two farms and a dairy. I was just wondering if CNSC staff has had a chance to see those and to comment on whether these are high levels or low levels or what their significance might be and so on.

So on page 9, Table 4 of the report from Laval, bottom line. It would help me if those numbers were somehow brought into significance realizing they're relatively small numbers of measures and how these numbers might relate to international standards, and so on.

DR. THOMPSON: Patsy Thompson, for the record.

I won't comment specifically on the data provided in the Laval report except to say that the Environmental Monitoring Program conducted by AECL to meet licence requirements does include monitoring of milk and the doses to members of the public, to infants, has been low during the operational history of the site. And so those samples are actually within what we expect from a

facility such as Chalk River, with very low doses to members of the public including infants, from consumption of milk.

MEMBER DOSMAN: Becquerals per litre, are those high? Are they low? How do they relate to international standards?

DR. THOMPSON: Patsy Thompson, for the record.

We could come back on Day Two and provide that information to you in the context of the region and the values and natural background areas.

MEMBER DOSMAN: Thank you.

I wonder if AECL has any comment on this item.

MR. McGEE: Brian McGee, for the record.

I think what we prefer to do, is work with CNSC staff so we come back together on Day Two and give you a complete answer that we're in agreement with.

MEMBER DOSMAN: Mr. Chair, that's my first round.

THE CHAIRPERSON: Dr. McDill.

MEMBER McDILL: Thank you.

I have several questions relating to the PDP on page 29 in 6.3.2. There are various references to 100 years and 300 years, so my first question to AECL;

knowing the kind of legacy you're dealing with now, with just 50 years, how do you intend to make sure that over the next 50, 100 and 300 years -- I doubt very much any of us will be here to answer questions then -- how will the documentation be maintained so that legacy issues are well understood, in 100 years?

MR. McGEE: Brian McGee.

I'll ask Bruce Lange to handle that question but let me make a general statement. It goes to my comments earlier in the day.

We really want to learn from the past and we're convinced that we need to be thinking in a very strategic manner and be thinking long-term about all these issues so that future generations don't look back and question why we weren't able to see certain things. So on a general basis, that's a focus of our management of the site, as we go forward.

I'll ask Bruce Lange to elaborate on your question itself.

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

Just to confirm your question; when you refer in your records, you mean how are we ensuring that the records of what we're doing now get to the people in the future so they can operate on it effectively?

MEMBER McDILL: That's correct.

MR. LANGE: That's been a very fundamental component of the development of the Decommissioning Program and as Brian was saying, there are some very dynamic and demonstrative examples of how important this is. For example, in 1956 on the Chalk River site, the records which were being stored above the carpenter's shop burned, because the carpenter's shop caught on fire. That has compromised our ability to get certain details about some of the waste that were placed in the Chalk River area in the past. So we have learned from that.

We have established within the decommissioning organization, something that we used to call the Decommissioning Information Management Office, now called the Liability Management Information Office. Their sole job is to collect and archive and catalogue and send to Stone Mountain or Iron Mountain -- there's a Canadian government repository that takes those records -- to ensure that all the relevant documentation that we are either recovering from the past or generating ourselves or recording in such things as groundwater monitoring are put into a form that will enable future generations to readily access that information and then be able to take actions accordingly.

So we think that -- we have, we are very

confident that the attention we are now paying to addressing that issue has been formally addressed.

MS. McDILL: Thank you.

And staff, is that your understanding of how things are being handled?

MR. HOWARD: Don Howard, for the record.

Yes, basically in reviewing the proposal by AECL, the one thing to remember is that as long as AECL is under licence, their licence will be coming up for periodic review. During those reviews, the Comprehensive Preliminary Decommissioning Plan and all of the associated programs that go with it will also be under review. So we will be looking at records as time goes on. We don’t wait for 70 or 100 years into the future. We look at it on a five year incremental -- you know, for the licence renewal at that point.

And also as long as they are under licence, they have to conform with the general regulations with respect to the keeping of the records.

MEMBER McDILL: Thank you.

And on the same page, the very last sentence, the assumption that conformational monitoring will not be needed for more than 50 years; at what point will you be determining -- at what point is it planned that you will determine that you need, that you might need

more than 50 years -- at 35, 40 years, is there some benchmark? I didn't find it but I must admit there's a lot of material. Is there a benchmark for examining whether or not you need to go more than 50 years?

MR. McGEE: Brian McGee, for the record. I'll ask Bruce Lange to answer.

MR. LANGE: For the record, Bruce Lange. Yes, with respect to looking at the groundwater conditions and the affected lands; trending is very much a large component of what we're doing now. In fact, we're using something called controlled charting to examine whether or not -- and this relates to the statistics -- whether or not a certain value is in fact of significance or whether it's sort of in the grass.

We will continue to collect these trends. We will also look at information that we have gleaned about the nature of the source term as Gerald was talking about, to determine if in fact, the trend and the information about the source term is such that we feel we can terminate the monitoring or if indeed, we're a little bit uncertain about that trending and we should perhaps give ourselves a longer monitoring period.

So the decision about the end point of the monitoring process will have to be predicated on the nature of the trends and the understanding of the area.

So it isn't a fixed period, an all priory assumption that it will in fact stop at 50 years.

MEMBER McDILL: Thank you.

Does staff have a comment?

MR. HOWARD: Don Howard, for the record.

The monitoring period of 50 years again is basically in order to change or stop monitoring as long as they are under licence, will require CNSC approval at that time, taking into consideration over the next 50 years, that there will be a lot of activities going on with respect to decommissioning or identifying source terms or whatever goes on.

The Comprehensive Preliminary Decommissioning Plan is a living document.

It will go through several revisions over the next 50 years and as new evidence comes forward, we would expect the document to be updated. So that timeframe may change, it may not. I'm really not -- I can't comment at this point. But the thing I can say is that as long as they are under licence they are required to have a monitoring program acceptable to the CNSC and we would review that at that time.

MEMBER McDILL: Thank you, Mr. Chair.

THE CHAIRPERSON: Thank you.

Dr. Barnes.

MEMBER BARNES: Just a couple of questions first on the PDP 002, the decommissioning on page 50 which is the penultimate page. The decommissioning liability cost is given at $1.97 billion dollars out of the "$2.75 billion" reported in the 2005 annual report. What is the difference? Where is that to be expended?

MR. McGEE: Brian McGee, for the record.

I'll ask Bill Kupferschmidt to answer that.

MR. COOPERSCHMIDT: For the record, Bill Kupferschmidt, General Manager, Decommissioning the Waste Management.

The difference between the 1.97 billion and the 2.75 billion represents the liability associated with our other sites, including Whiteshell Laboratories and the other three prototype reactor sites that we also have responsibility for.

MEMBER BARNES: Thanks. You mentioned the 2005 annual report. Of course, we have the 2004 annual report for this. We'd like you to get a copy of the 2005 annual report before Day Two. Okay?

MR. McGEE: Brian McGee, for the record.

I'll ask Bill Kupferschmidt to answer.

MR. KUPFERSCHMIDT: Bill Kupferschmidt, for the record.

I am assuming you are referring to the

annual report?

MEMBER BARNES: Right.

MR. KUPFERSCHMIDT: That report will be becoming available in the fall of this coming year. It, typically, is finalized and is presented to Parliament.

If we're talking about the same document, Mr. Commissioner, the annual report, the corporation becomes available at that time of the year.

MEMBER BARNES: Okay, thanks.

MR. KUPFERSCHMIDT: Is that the report you were referring to --

MEMBER BARNES: Yes, thank you.

In the 10.6 that just follows that paragraph I was just referring to "source of funding", you mentioned that prior to '96-'97 you were getting funds for the decommissioning program from the sale of heavy water inventory and that since then you've -- over the last decade and prior to that you were getting it funded by parliamentary appropriations which you'd have to go back to if --

So what is the situation with, I'll say, a renewal or an extension of the 10-year funding agreement since, I guess, it's coming up for renewal this year? Is that right?

MR. McGEE: Brian McGee, for the record.

I'll ask Bob Van Adel to answer that question.

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

The heavy water funding stream has been replaced by the new allocation of funds that would be specifically approved for the waste and decommissioning liability program so that a current consideration of whether that particular source of funds will continue to be available for -- use by AECL is under consideration by the government today but it's not critical. It's no longer critical to –- as a source of funds for this program going forward.

MEMBER BARNES: Okay.

Am I right in thinking that the source of fundings which that paragraph is addressing -– try and assure us that there is a source of funding -– is really the source of funding you announced in the sense at the beginning of the meeting. Is that right?

MR. VAN ADEL: Yes, that is correct.

MEMBER BARNES: And that's adequate to cover the $1.97 billion?

MR. VAN ADEL: Yes, it would be, in the 5-year period.

MEMBER BARNES: Right. In the AECL presentation there was a short reference to various

outreach activities including the community newsletter, the expended external website, and so on. But in particular there was the Environmental Stewardship Council. Could you give us more information about that? What is its composition; if it's been formed, and the present time who it reports to, and so on?

MR. McGEE: Brian McGee, for the record.

The Environmental Stewardship Council has not actually been formed yet. The terms of reference are in final draft. We've talked with the communities about it. We haven't finalized the terms of references and it is intended to be –- our intent is that we will have each of the local municipalities nominate someone to the council; probably an elected official, that's typically the way it would it go down.

But each of the communities would nominate someone and we'll also be contacting a sampling of the interest groups as well and offering them the opportunity, including the First Nations. And so offering them -– and so we'll compose a group and it will have a cross-section of elected officials and a cross-section of interest groups and AECL senior management staff.

And the idea will be that we will -– one is a mechanism for sharing our performance, including in the area of decommissioning and in general terms of

performance and environmental impact, and so on. It will be an opportunity to share with them what we're doing with some of the decommissioning aspects and get their input.

So primarily, an opportunity for stronger communication as well as an opportunity to collect their input to influence the direction of our programs.

MEMBER BARNES: So it's more a kind of liaison or communications council rather than an advisory council to AECL.

MR. McGEE: Brian McGee, for the record.

We're building into the terms of reference at this time the ability to make recommendations to senior management in AECL.

MEMBER BARNES: You just said that there would be several representatives from AECL on the council?

MR. McGEE: That's correct. Some senior management staff from AECL would be on it, including myself, as well as a cross-section of the communities and interest groups. And so the intent would be that it would give them an opportunity to provide me with advice and recommendations as well.

MEMBER BARNES: I guess there are two kinds of councils you set up that way. One is this separate group of people that feel they can provide advice, and the other is to have sort of a shared membership in which case

you’re kind of, to some extent, stacking the deck as it were.

MR. McGEE: Brian McGee, for the record.

MEMBER BARNES: As opposed to being *ex-officio* on it.

MR. McGEE: Brian McGee, for the record.

So the terms of reference are in draft. What are you -– we’ve enlisted the help of a senior industry expert in this area –- or maybe it’s too strong to say an expert in this area –- but someone who has established these committees with other licensees. We value his input and we’re going to continue to work with him and with the communities and the interest groups to come up with the right terms of reference for it.

There will be more non-AECL staff on the council than there will be AECL staff. So there will be –- it will be primarily composed of people from the community and the interest groups.

MEMBER BARNES: Will we be able to get a copy of the terms of reference by Day Two?

MR. McGEE: Brian McGee, for the record.

That should not be a problem to get you terms of reference by Day Two. I would expect we’ll have had our first meeting with the council by Day Two.

MEMBER BARNES: And does staff have any

comment on this? Counsel?

MR. LAMARRE: Greg Lamarre, for the record.

Perhaps if I could just step back and look at the communications and public consultation plan that was submitted in part with the CPDP package for the financial guarantee, staff did review that as a high-level document, compared it against G-217 and made a decision in our minds that it met requirements.

That being said, the Environmental Stewardship Council is one of the elements under that program. We have not specifically assessed that. Obviously, we don't yet have the terms of reference. We would anticipate being able to perform some degree of follow-up work on that program once it's fully established.

THE CHAIRPERSON: Thank you. Just a couple of questions I have.

The next five years, and I realize that there may be announcements by the minister and I don't want to contravene Parliament or anything, but do you have an estimate of the cost for the next five years? Is that available today or will that only be available on Day Two after announcement?

MR. McGEE: Brian McGee, for the record.

I assume you're talking about the

decommissioning program that we intend to operate in the next five years. The estimated cost is around $512 million.

THE CHAIRPERSON: And is that broken down so much –- do you have it broken down by year? You're looking for a commitment for five years, I realize, but year 1, year 2, year 3 of the five years...

Do you have that broken down?

MR. McGEE: Brian McGee, for the record.

Yes, we have it broken down for the full five-year period. The magnitude is roughly $65 million in the coming year is our targeted work activity and it will ramp up consistently over the five-year period up in around, in fact, over $100 million towards the end of the five-year period.

THE CHAIRPERSON: Does the basis of cost estimate for CRL document include the cost of modelling information?

MR. McGEE: Brian McGee, for the record.

I'll let Bill Kupferschmidt answer that question.

MR. KUPFERSCHMIDT: Bill Kupferschmidt, General Manager, Decommissioning and Waste Management.

The simple answer to your question, Mr. Chairman, is "yes".

THE CHAIRPERSON: A question to CNSC staff is that -- has that all been provided? I didn't see it in documentation and I'm just wondering is that available or will that only be available on Day Two?

MR. HOWARD: Don Howard, for the record.

Our review of the five-year operational plan that AECL has submitted, within that five years they do provide some time and money towards designing the facilities that they will need and also designing the programs that they will have to put in place over the next five years to address decommissioning.

THE CHAIRPERSON: And has CNSC staff reviewed that and are they satisfied with its modelling?

MR. HOWARD: CNSC staff has reviewed -- Don Howard, for the record. Sorry -- CNSC staff has reviewed that. We are currently satisfied with the five-year operational plan, recognizing that this is a plan which will require regulatory oversight over the next five years to ensure things are being implemented in a timely fashion to ensure progress is being made towards the eventual decommissioning of the Chalk River site.

THE CHAIRPERSON: Thank you.

Round two: Any questions on round two, Dr. Dosman?

MEMBER DOSMAN: Just a couple of quick

questions.

My first question is on the Public Information Program and, as noted by the CNSC staff, CMD 06-H9 on page 38, on the issue of public information in the last licensing AECL was to have undertaken to include more information on its environmental health and safety performance information; health and safety performance to the community. It would appear from staff's presentation that staff is not happy to the degree to which that has happened and we don't want to dwell in the past. We are looking to the future. But I would just like to hear from AECL what plans you have to convey information on the environment and on health and safety to the community.

MR. McGEE: Brian McGee, for the record.

I'll answer the question and if you want more depth you can tell me and I'll ask Donna Roach to elaborate.

So fundamentally, our approach is going to be the Environmental Stewardship Council. We are putting in place a community newsletter that we expect to publish. Frequencies still need somewhat to be determined, probably quarterly.

We are also going to enhance our own communication on the site with our own employees who are looking at a weekly or, sorry, a monthly newsletter with

our own employees. The reason I mention that is because our own employees are communication channels to the community as well. So that's another avenue.

We're also looking at expanding the information and the capability of our external website to make information more readily available to the community and interested parties.

MEMBER DOSMAN: Thank you.

Mr. Chair, I would appreciate hearing from Ms. Roach if that's possible.

MR. McGEE: Brian McGee, for the record.

Absolutely.

Donna Roach, if you could expand?

MS. ROACH: Good afternoon. Donna Roach, for the record.

Yes, we are working with the communities on a regular basis. Some of the things that we have been doing in the past that we are going to continue to do, which seem to be quite effective, we continue to meet regularly with our elected officials and other groups in the community.

The initiatives that Brian mentioned with regards to the Environmental Stewardship Council is something that we are quite excited about because it's going to be able to provide us with an opportunity to be

having more face-to-face discussions, especially with groups that have traditionally not been quite in favour of some of the things that we're doing. We provide information to them on a very regular basis as reports are released, for instance. We provide that information to them either through electronic links or as hard copies. We have been posting a lot more information on the website trying to make that more readily available.

One thing that we were criticized a bit for and rightfully so in the last licence renewal was the fact that we had provided some reports that had been redacted and we have not done that in this current licence period. We have moved away from that. We have set up disclosure databases to be able to track all of that information. So we are quite pleased with the fact that we're now providing a lot more information. The interest groups are getting this on a very regular basis and so using the stewardship council is an opportunity to get some feedback on some of that information is going to be quite valuable to us.

MEMBER DOSMAN: Mr. Chair, I wonder if I might follow up with Ms. Roach.

Are you getting any sense from the community as to the response of the community to these measures?

MS. ROACH: We certainly have, I would say, a very good working relationship with the communities. They seem to understand that we're there doing whatever we can to improve the health and safety of the operations. We've been sharing all of the information with respect to the Improvement Initiative Programs that are underway for both NRU and for DIF.

As I say, in the meetings that we host we get good feedback. Brian was just invited to give a presentation. It was a televised presentation to Pembroke City Council on the 18th of April which was very well received. We know, having said that, we do have good support and we certainly get that at intervention time, but we always know that we can do better. While we do have some mechanisms that are working well for us, we're completely open to making any improvements that we can in providing better, more information that we can, and as I say, we're very open to doing that.

Hopefully, through the Environmental Stewardship Council that will probably give us the opportunity to come up with some other things to do.

Having said that, one of the other things that we did include in the revised framework for consultation for CPDP as well as in the Public Information Program going forward, there was some discussion around

the fact that open houses don't seem to provide much of an opportunity for two-way dialogues. So we have taken the approach that we will be going more with townhall meetings and we will certainly be going further afield with those, advertising in the Ottawa area once we get into those kinds of meetings and providing that sort of opportunity.

We certainly recognize in that vein groups such as the Ottawa Vanier Greens, the Ottawa River Keeper, Greenpeace, Sierra Club. A lot of them are based in this particular area and they have an interest there and they'll certainly be invited to sit on the council and they'll certainly be invited to come to all of those meetings that we have, as well as continue to participate in the consultation project types of things going forward with decommissioning waste management.

MEMBER DOSMAN: Thank you.

I'm just wondering, Mr. Chair, if 9 on the top of page 39, CNSC staff request that deficiencies in sharing; presumably, environment and occupation, health and safety data, be addressed as soon as possible. I'm just wondering what the view of CNSC staff is on the measures that are being taken and the plans that are in effect.

MR. COLLIGAN: Lawrence Colligan, for the record.

As outlined in CMD 06-H9, we've recognized that the program actually is acceptable. It would meet what we consider to be an acceptable public information program. However, we would like to see it exceed certain minimum requirements, especially in the area of providing health and safety and environmental information to the general public.

That being said, both for the Public Information Program for the CPDP and the general one on this licence renewal, we see that the Environmental Stewardship Council as being a positive step and we should take into consideration what was said at the previous licensing meeting a few years ago. They have made -- AECL has made major strides forward, major improvement, and we had also hoped that more information would be provided on AECL's website both on health, safety and the environment, and that seems to be occurring.

So we view this as being positive progress in the overall provision of information to the public and stakeholders.

MEMBER DOSMAN: Mr. Chair, I have one more question for AECL, if I might. I noted in the area of emergency preparedness that there have been no re-evaluation of the Emergency Preparedness Plan since 2002 if I interpret the documentation or report correctly. I'm

just wondering why that is. Is it not necessary, or it hasn't been a priority, or what would the story be on that comment?

MR. McGEE: Brian McGee, for the record.

I believe it's actually the CNSC staff comment that you're referring to so maybe I could ---

MEMBER DOSMAN: No, I'm just asking why there has been no re-evaluation since 2002 of the Emergency Preparedness Plan. What is the reason that AECL would have for not re-evaluating it, the Emergency Preparedness Plan?

MR. HOWDEN: Mr. Chair, may I respond to that?

No re-evaluation since 2002 is no re-evaluation by CNSC staff. AECL has continued with the program and putting it in place, but as part of our routine compliance and assessment it's us and we're into the cycle now where there will be a re-assessment this summer.

MEMBER DOSMAN: Mr. Chair, the staff then has no particular concern about the Emergency Preparedness Plan?

MR. HOWDEN: Barclay Howden speaking.

At the present time, no. We are on site on a frequent basis for inspections and other meetings, and

we have seen no evidence that there has been a deterioration. But again, for due diligence we're coming through the cycle where we will be doing an assessment this summer.

MEMBER DOSMAN: Thank you for that clarification, which I appreciate.

THE CHAIRPERSON: The Chair apologizes. I think Ms. Roach did have a comment that you wanted to make and I missed it when I referred back to Dr. Dosman.

MS. ROACH: Thank you.

Donna Roach. I appreciate the opportunity to just make one more clarification.

Certainly, the comment made by Mr. Colligan with respect to trying to have more information available on health safety and environment, that is one area that I skipped over and I apologize for missing, but I just did want to add something.

One of the areas that we've recognized that we have been deficient is in trying to get the kind of data that we want to be able to report to the communities on a more timely basis. And certainly in the environmental program area they've recognized this and they've just started to launch a new sort of database that can track that information in a much more timely fashion. They're just working out the bugs in it and so it's sort

of a bit of a scoop for you I guess. But they're working the bugs out and they're working with our IT group to try to figure out the best way to pull that information out that we can be able to grab it and put it into something that is going to be meaningful to people.

So once we have a bit more information we'll be able to figure out what the frequency of that will be. That information will definitely be shared as part of the new website that's being redesigned with a major focus on the environment and that kind of information being reported. It will be included in the website as part of a standalone piece as well as links to other spots in the website, and it will also be included in the community newsletter. SO there will be more of that kind of information available going forward.

THE CHAIRPERSON: Thank you.

Dr. McDill, do you have anything in round two? If not then that finishes round two of theme three. And the last thing that I mentioned at the outset this morning was theme four, matters that relate to NRU facility not already covered under provisions of the other themes.

I'll start with Dr. Barnes.

MEMBER BARNES: Just a couple of points.

Mr. McGee, in your -- this is first with

the NRU. In your early comments of the meeting you indicated that there had been a -- I wrote it down -- an informal two-week review, an internal review process. Do you remember that, for looking at the future of NRU and the resources that would be put into it?

I guess I'm surprised that, again, in a managerial and procedural viewpoint for such an important component of the assets there onsite and with this sort of particular point in its history of not being moth-balled or decommissioned but in fact giving it a renewed lease on life that this wouldn't have been a much more formal process, perhaps with some external reviewers coming in to give advice.

MR. McGEE: Brian McGee, for the record.

My reference to the two-week review was in conjunction with the discussion on the CNSC staff audit of the two special safety systems.

What I referenced was that our process from the time of the exit two weeks later, looking specifically at the informal information that was left with us by CNSC staff on their audit findings, and we went through a review process that took two weeks to accomplish, and that was partly driven by our need to be able to communicate with staff. But that two-week review was not a totalized look at NRU performance. It wasn't a life assessment

look. It was not of that nature at all. It was specifically in regard to the CNSC audit on the two special safety systems and it involved assuring ourselves that it was still safe to operate based on the feedback that we got at the informal exit meeting.

It involved going out and where documentation wasn't readily retrievable at the time of the audit, going and recovering that documentation. Because in some cases, and I believe it's acknowledged in the staff's audit report, it wasn't that the documentation wasn't ultimately available, it was that it wasn't available readily retrievable. So that was the two-week process I was refereeing to.

MEMBER BARNES: Okay. Thanks. I apologize for misinterpreting that or not remembering through the meeting this morning.

The other one, Mr. Chair, is somewhat different. It's not an NRU, but I guess this is a session for other. And one of the other appendices in here is Appendix D, the Ecologic Effects Review, and there are a number of recommendations in there, and specifically recommendations 2, 3, and 4, each of which report that their various analyses have been made, typically a year or so ago and are being evaluated and a report is being prepared. It doesn't really give an indication of how

soon the report will be prepared.

Sorry, this is on page D2 of LP 002, the Ecologic Effects, Appendix D.

Is it possible to get a summary of these findings for Day Two on those reports, should they be available by Day Two, or can you say at this stage whether you expect those reports to be available by Day Two?

MR. McGEE: Brian McGee, for the record.

I'll ask Ray Lambert to answer.

MR. LAMBERT: Ray Lambert for the record.

First, let me confirm that the actions, the recommendations coming out of the Ecological Effects Action Plan is on schedule for completion, if the target date is agreed to. We can put together a status update by Day Two with the findings that we have to date from the information we've received by that time.

MEMBER BARNES: Thank you.

That's all, Mr. Chair.

THE CHAIRPERSON: Dr. McDill?

MEMBER McDILL: Thank you.

My last few questions relate to the Appendix C of CMD 06-H9. My first question -- I understand that there were audits of the seven upgrades and there were exit interviews, if you like, and discussions. What was the state of the other five?

MR. McGEE: Brian McGee, for the record.

That was part of what I referred to earlier as an extensive condition. There's an extensive condition we need to understand fully and we're working towards that understanding fully of the two systems that were examined because it wasn't a full examination. So we need to look at expanding the extensive condition to those two systems as well as to the other five systems.

And as part of our overall response to that audit we're using a systematic approach in our response, and the first thing that we needed to assure ourselves of was continued safe operation and going and putting the right compensatory actions in place to either assure that, or continue to assure that, or to disposition the findings as they were written, expanding the extensive condition, going and doing a more comprehensive audit and assessment ourselves, as well as looking at the underlying problems that resulted in this outcome in the first place.

So all those things are underway to varying degrees of activity right now and we'll be continuing to work on those leading into Day Two and we'll be in communication with staff about our plans in those areas more specifically.

MEMBER McDILL: Does staff have anything to say about the other five?

MR. LAMARRE: Greg Lamarre for the record.

Perhaps we could just step back and set the context. The Quality Assurance Audit that was done on those two upgrades was what we deemed to be a representative sampling. So we looked at two of the upgrades. Two of them were, in our view, critical upgrades to look at design, procurement, construction, commissioning, operation, the quality assurance and quality management state of affairs for those two.

What you will find in the CMD and in the Audit Report, if you so wish, is that a lot of the directives and findings likely apply beyond the two and we expect AECL to take very much a holistic look across the series of seven upgrades when they look at how they're going to disposition those audit findings.

So even though we looked at two, that was really done for representative sampling and something that was really a sizeable chunk of work for staff to do within a reasonable period of time.

MEMBER McDILL: Thank you. So the findings really applied to all seven in a general sense?

MR. McGEE: Brian McGee for the record.

That's our view as well and we view this as, you know, a significant opportunity to learn and improve our processes as a result.

MEMBER McDILL: Thank you.

My next question then relates to the issue of codes on lifetimes of 20 years and the lack at this point in time of a destructive analysis of some of the essential material of the reactor.

Is there some specific scientific or engineering challenge that prevents AECL from doing a destructive analysis, some fundamental reason?

MR. McGEE: Brian McGee for the record.

I'll ask Deny See Hoye to address that question.

MR. SEE HOYE: For the record, Deny See Hoye, Manager of the NRU Licence Extension Program.

There is no fundamental reason why destructive examination cannot be done. In fact, we have done some destructive examinations but I want to say that the purpose of destructive examination would be to prove the material -- to show that the material properties of the component has not degraded as part of one of the aging degradation mechanisms that have been evaluated for that particular component.

As an example, we have destructively tested a fuel rod cup which is a device at the bottom of the reactor which holds the fuel rod in place and the purpose of that destructive examination was to show that the fuel

rod cup had not suffered undue neutron embrittlement so that its properties would be compromised.

We chose that particular component because it does experience neutron fluence and it is the same material as the lower reactor header and what we have found through that examination is that the material properties of the irradiated rod cup is substantially the same as that of the installed -- as installed component.

Our conclusion from that is that the lower headers which are made of the same component and see a lesser neutron fluence than the rod cup have not suffered any neutron damage as well. Therefore, the prognosis for service is good.

MEMBER McDILL: But what was the nature of the destructive testing? Was it for fracture or for fatigue or for yield strength or for ultimate strength or for creep strength or all of the above?

MR. SEE HOYE: Deny See Hoye for the record.

The destructive testing was for tensile strength and the tensile strength has not altered from the original material specification. And from that, we concluded that the fatigue, the ductility of the component is substantially the same.

I want to point out that destructive

testing of bulk materials is not a good indicator of fatigue. Rather, fatigue is generally addressed through stress analysis and through application of fatigue analysis through specification of a number of fatigue cycles. And for the lower header, lower reactor header, we have certainly done this and satisfied the requirements of the ASME Section 8, Division 2 Rules.

For the analysis, we used an extremely conservative number of cycles and just to provide some background, there are substantial differences between the NRU Reactor and, for example, a power reactor. The typical pressure and temperature that the lower header receives is of the order of about 35 degrees Centigrade, which if you compare that to a power reactor would be of the order of 300 to 350 degrees Centigrade. So it's a substantially lower temperature and likewise, the pressures that the lower header sees is about 100 PSI-G, which is again substantially lower.

MEMBER McDILL: Thank you. That's helpful.

Then maybe I could ask staff why the apparent contradiction with respect to destructive analysis. Staff is expecting something different?

MR. LAMARRE: Greg Lamarre for the record.

I’m going to make a couple of quick comments and then I'll ask Mr. Bill Grant to provide a

little bit more detailed information.

Just to put this in context again, one of the principal tenants of AECL Safety and Licensing Plan for the licence ability extension of NRU was an aging management program. There is much work that has been done by the licensee. We believe that there is significant work still to be done.

We're aware of the fact that in the Phase 2A of the Plant Life Management Program, that's the assessment of the critical SSCs, there has been no indication as far as we know of degradation to the extent where safe operation of that plant would be compromised in the short term. But clearly what we're talking about here is assured longer term safe operation.

So what we're getting down into now, and I'll ask Mr. Grant to comment on it a little bit further, is what extent of analysis do we need in order to assure ourselves as the regulator that it's not only safe to operate today and tomorrow but well into the future?

MR. GRANT: For the record, my name is Bill Grant. I am the Safety Inspection Administrator in the Engineering Design and Assessment Division.

Putting the plant in a more holistic context, this plant was designed in the ‘50s. It was commissioned in the ‘50s. It has had 70 per cent capacity

factor operating load and it's looking to be extended for another 20 or 30 years.

The safety analysis is predicated on the fact that the codes and standards under which the plant was originally designed remain in force. One of the salient parts of that is that the pressure boundary remains capable of doing its job.

So the requirement to look at some of the piping, some of the supports and some of the other critical items to safety in the installed plant which have been in long service, much longer service than a fuel rod cup which is not a pressure retaining component, would seem to be prudent at this time.

The components are basically stainless steel. Most of the PHT system and most of the safety systems are stainless steel. And, as you are aware, stainless steels generally fails either by fatigue or inter-granular stress-corrosion cracking.

The documentation submitted to date is generic in context, it is not specific and it doesn’t tie back to why it meets the pressure boundary licence conditions. So there’s a couple of disconnects in the assurance and the evidence of compliance being supplied by the licensee at this time.

Thank you.

MEMBER McDILL: Mr. McGee, I wonder if you'd like to comment on the two opinions you've just heard, because it seems to me -- if you'll forgive the expression –- we're suffering from a lack of convergence again. There's some difference here in what people think is expected and what is coming.

MR. McGEE: Brian McGee for the record.

You've heard me talk several times before about safe operation. That's my accountability and I take it seriously. This area is no different. My reaction to the conversation tells me that we need to have some discussions with CNSC staff and we need to achieve the convergence that you refer to.

And I'm confident that with the working relationship that we have with staff, that that's a very viable prospect. So I would say to you that between now and Day Two we'll sit down with CNSC staff and we'll work towards converging our thinking in this area.

MEMBER McDILL: Thank you, Mr. Chair.

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

MEMBER DOSMAN: I guess to follow up with just one question on the line that Dr. McDill was broaching, is AECL confident that the pressure boundaries will be maintained adequately for the duration of the

proposed five-year licence?

MR. McGEE: Brian McGee for the record.

Based on all the operating information that we have and the operating experience that we've developed, there's no reason to doubt the integrity of the overall pressure boundary for the primary systems.

We're contained to do inspections and when we do those inspections, if we discover anything that is of concern, we will address them on a case-by-case basis. That's the basis of the inspection program and that's the reason for those types of inspection programs.

What I can assure you is that if there's ever any evidence that a pressure boundary doesn't have sufficient integrity to operate safely, then we will take the reactor out of service.

THE CHAIRPERSON: Thank you.

Are there any other questions from other Commission Members?

If not, I just have one with regard to fire protection and you were in non-compliance or there were several non-compliance revealed in the 2004, I believe it is, study. And there is a license condition of 10.2 that will come forward that has to be resolved. These non-compliance have to be resolved before July of 2006. Would you like to advise -– this is to AECL -– would you like to

advice if these non-compliance issues are well in hand and proceeding or will you want to provide more information on Day Two?

MR. McGEE: Brian McGee for the record.

So the non-compliances, in our view, have been addressed. The fire protection program rating, I think, demonstrates that, the rating given to us by staff. We're continuing to make progress on our fire protection program and I think that the change in rating reflects what I would consider to be a dramatic change not only in our performance in addressing day-to-day fire deficiencies, the deficiencies on the existing fire systems, but also in the organizational culture when it comes to fire safety.

Over the license period, and I believe it's described in the CNSC staff CMD, over the license period we will be undertaking to do other fire hazard assessment work, if you want, on various critical facilities. And out of that I would expect that there will be other issues that will be identified and other issues that we will address as a result of that.

So I'm pleased with our progress on the fire safety improvements. We have more work to do, and we're committed to doing that.

THE CHAIRPERSON: In reading the documents,

though, I know there was a lot. I'm just trying to find it, but there were some issues that have now been resolved but they seem to have been kind of more or less common sense issues that were let go back a while and I'm glad to hear today that you're working towards compliance.

Would CNSC staff like to comment with regard to the condition 10.2 being required to be met in the new license approval in order that the NRU operate beyond July 2006?

MR. LAMARRE: Greg Lamarre for the record.

Mr. Chair, I'd like to make one clarification; that is that there exists ongoing non-compliances with regards to fire protection at NRU. I think that's point number 1 that we should make. We delineated somewhat NRU from the remainder of the site in that one program area. I think what I can say is that the fire protection program across the site has seen some tremendous improvements that resulted in those B ratings. There's still work to be done at NRU. What we have in our licensing plan for NRU is that, for operations beyond July 2006, we're looking for a detailed resolution plan against those outstanding deficiencies, those non-compliances.

We do not expect them to be resolved in very short order. What I'll do is ask Mr. Grant Cherkas to provide a little bit more details on those specific

deficiencies, non-compliances and the timelines in the action plan.

Thank you.

MR. CHERKAS: For the record, Grant Cherkas.

What we expect from the licensee is to provide us with a detailed corrective action plan that will look forward and also we'd like to note that a number of the deficiencies that were identified in the 2004 audit have been resolved due to the hard work of the licensee.

Primarily, what's outstanding is the resolution of safety analysis related to fire at NRU. The fire hazard analysis was performed, was reviewed by CNSC staff and some observations and recommendations were put back to the licensee to resolve. And we anticipate that being resolved likely within the next two years.

THE CHAIRPERSON: Thank you.

Do any members wish to ask any additional questions pertaining to this application?

If not, if there are no more questions, I will ask the secretary to inform us of the next steps of this matter.

MR. LEBLANC: Merci. This hearing is to be continued with Day Two on June 28, 2006, here in the CNSC offices. The public is invited to participate either by

oral presentation or written submission on hearing Day Two. Persons who wish to intervene on that day must file submissions by May 29, 2006.

The hearing is now adjourned to June 28, 2006.

THE CHAIRPERSON: Thank you.

This brings to a close the public hearing of the Canadian Nuclear Safety Commission. I would like to thank everyone for your attendance today and assisting me in a novice job.

The meeting is now adjourned and the Commission meeting will start at 15:00 hours, 3:00 in this room.

--- Upon adjourning at 2:47 p.m.