

**Canadian Nuclear  
Safety Commission**

**Commission canadienne de  
sûreté nucléaire**

**Panel Hearings**

**Audiences des formations**

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**Le 27 avril 2006**

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

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

**Commission Members present**

**Commissaires présents**

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

M. Alan R. Graham  
M. Christopher R. Barnes  
M<sup>me</sup> Moyra McDill  
M. James Dosman

**Secretary:** Mr. Marc A. Leblanc

**Secrétaire:** M. Marc A. Leblanc

**General Counsel :** Jacques Lavoie

**Conseiller général :** Jacques Lavoie

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Ottawa, Ontario

--- Upon commencing at 9:00 a.m.

**Opening Remarks**

**MR. LEBLANC:** Bonjour.

Bienvenu à cette audience de la Commission canadienne de sûreté nucléaire. We have one hearing today. It's a panel hearing. There will be two members, with Dr. Barnes being the presiding member.

We have transcription but I don't think we have interpretation services. The interpretation services in future will be offered on a "need to" basis, particularly with respect to those types of hearings. So we will make -- in our notices we will ask if there are people who plan to attend who need the interpretation services.

So with this I will ask, because we have a transcriptionist, I will ask that you speak clearly, you identify yourselves before starting. Also please close your cell phones and Dr. Barnes will be the presiding member. Mr. Chair?

**THE CHAIRPERSON:** Bonjour, good morning and welcome to this panel on the Environmental Assessment Screening Report regarding the Proposal to Construct and

1 Operate the Shielded Modular Above-Ground Storage (SMAGS)  
2 at Chalk River Laboratories.

3 As Marc has indicated, my name is Chris  
4 Barnes and I'll be presiding here today and Dr. James  
5 Dosman, on my left, is joining me on this Panel.

6 In addition, as you're well aware, Mr. Marc  
7 Leblanc, the Secretary of the Commission and Mr. Jacques  
8 Lavoie, as General Counsel for the Commission, are with us  
9 today on the podium.

10 I would like you to know that the  
11 Commission is still on enhanced security status and there  
12 are many facilities with which we regulate. As such, I  
13 will, as appropriate, take measures to ensure that  
14 security matters of a sensitive nature are not discussed  
15 in public and we will, if necessary, move *in-camera* at any  
16 time for discussions on security matters.

17 So the Commission Members have read the  
18 written submission filed by CNSC staff, as outlined in  
19 Commission Member Document 06-H113.

20 I understand that AECL has prepared a brief  
21 presentation. I will turn it over to Mr. Kupferschmidt.

22 Sir, the floor is your's.

23

24 **Atomic Energy of Canada Limited :**

25 **Environmental Assessment Screening**

1       **Report regarding the Proposal to**  
2       **Construct and Operate the Shielded**  
3       **Modular Above-Ground Storage at Chalk**  
4       **River, Laboratories, Chalk River, Ontario**

5  
6       **06-H113.1**

7       **Oral Presentation by Atomic**  
8       **Energy of Canada Limited**

9                   **MR. KUPFERSCHMIDT:**   Chairman Barnes and  
10       Commissioner Dosman, thank you and good morning.

11                   For the record my name is Bill  
12       Kupferschmidt and I am General Manager of AECL's  
13       Decommissioning and Waste Management Organizational Unit.

14                   With me today are members of the AECL team  
15       in support of the environmental assessment for the  
16       Shielded Modular Above-Ground Storage facility proposed  
17       for the Chalk River Laboratories of Atomic Energy of  
18       Canada Limited.

19                   Mr. Chair and Commissioners, subject to  
20       Commission approval we are planning to proceed with the  
21       construction and operation of six new buildings for the  
22       storage of low-level radioactive waste on the Chalk River  
23       site.

24                   These new structures, Shielded Modular  
25       Above-Ground Storage buildings, or SMAGS units as I will

1 refer to them for the rest of this presentation, will be  
2 constructed to store solid low-level radioactive wastes  
3 generated through our own laboratory operations and  
4 decommissioning activities, as well as wastes that we  
5 accept from off-site generators, such as isotope  
6 producers, mainly MDS Nordion, and isotope producers,  
7 predominantly hospitals, universities and industry.

8 The purpose of this introductory  
9 presentation is not to summarize the results of the CRL  
10 Screening Report, but rather to set the context for this  
11 project in terms of our overall strategy for managing  
12 waste on our Chalk River site.

13 AECL currently stores low-level radioactive  
14 wastes in two storage systems: Modular above ground  
15 storage buildings known as "MAGS" buildings in Waste  
16 Management Area "H", and (2): cylindrical bunkers in  
17 Waste Management Area "B", which are constructed below  
18 grade.

19 The solid lines on this process chart  
20 depict the current practice of receiving, compacting and  
21 storing low-level radioactive wastes in these bunkers and  
22 MAGS buildings. AS shown by the dashed lines,  
23 implementation of SMAGS will in large measure result in a  
24 single above-ground storage system for low-level  
25 radioactive waste that will replace the use of existing

1 cylindrical bunkers and of previously planned SMAGS  
2 buildings.

3 The design for AECL's SMAGS concept is  
4 based on the design implemented by Ontario Power  
5 Generation for its low-level storage buildings located at  
6 the Bruce Western Waste Management facility.

7 Let me briefly show you in our next two  
8 slides the technology that will be superseded with the  
9 adoption of SMAGS.

10 This slide shows pictures of the exterior  
11 and interior of one of the existing MAGS buildings at  
12 Chalk River. Two of these steel clad storage buildings  
13 have been constructed and are in operation in our Waste  
14 Management Area "H" at Chalk River labs.

15 The picture on the right shows the interior  
16 of this facility with containerized low-level radioactive  
17 waste either in place or being placed by a forklift inside  
18 of a building after compaction operations have been  
19 performed in a separate waste handling facility.

20 This slide shows pictures of the existing  
21 cylindrical bunkers in Waste Management Area "B". The  
22 bunkers have concrete walls and are below grade to provide  
23 shielding of the wastes.

24 Note, however, that the radiation fields  
25 are such that staff, as shown here, are able to work

1 directly with the low-level waste as shown in the bottom  
2 right hand figure.

3 Implementation of SMAGS will replace the  
4 use of these bunkers and the MAGS buildings shown on the  
5 previous slide.

6 To give you a better perspective of the  
7 SMAGS buildings envisioned for the Chalk River site, I  
8 show on this slide a module of three such units that have  
9 been constructed and which are in operation at the OPG  
10 Western Waste Management Facility. Concrete panel  
11 construction provides external shielding for the low-level  
12 radioactive waste.

13 We have submitted an application to  
14 construct six SMAGs unit at the Chalk River site. The  
15 first building has a size as shown in the exterior photo  
16 on the left hand side of the slide. All wastes placed in  
17 closed sealed containers will be emplaced by forklift into  
18 their designated location in the facility.

19 I note that both of these photographs have  
20 been provided with the courtesy of Ontario Power  
21 Generation.

22 The SMAGS buildings will be constructed in  
23 the existing Waste Management "H" at Chalk River  
24 Laboratories. The site has already been prepared under  
25 the environmental assessment previously submitted for the



1 MAGS project. The site is more than 200 meters to the  
2 nearest wetland or water body and about two kilometers  
3 from the Ottawa River.

4 The layout of the planned SMAGS buildings  
5 in relation to the two existing MAGS building in Waste  
6 Management Area "H" is shown on this slide.

7 The six SMAGS units will be constructed  
8 individually over the next 20 years as waste generation  
9 rates require them to enter operation.

10 Implementation of the SMAGS modules will  
11 improve low-level radioactive waste management storage at  
12 Chalk River by (1): providing increased storage space in  
13 Waste Management Area "H", essentially building a storage  
14 capacity based on the MAGS' concept; (2) Allowing for a  
15 better monitoring of the condition of waste storage  
16 containers; and (3) reducing the waste handling  
17 requirements for future waste repackaging or disposal  
18 operations.

19 AECL is keen to proceed as quickly as  
20 possible with the SMAGS project implementation for which  
21 the EA Screening Report concludes that there are no  
22 significant adverse environmental effects associated with  
23 the construction or operation of the SMAGS facilities.

24 Mr. Chair, Commissioner Dosman, this  
25 concludes my opening remarks. My colleagues and I would

1 be be pleased to answer any questions that you may have.

2 **THE CHAIRPERSON:** Thank you. Before going  
3 on to questioning, I would like to ask the CNSC staff if  
4 they wish to give a brief presentation or add anything to  
5 their written submission. I turn to Greg Lamarre,  
6 Director, Chalk River Laboratories Compliance and  
7 Licensing Division.

8 Mr. Lamarre, the floor is your's.

9 **MR. LAMARRE:** Thank you very much, Mr.  
10 Chair. Good morning, Mr. Chair, Mr. Dosman. My name is  
11 Greg Lamarre and I am the Director of the Chalk River  
12 Laboratories Compliance and Licensing Division. With me  
13 today is Dr. Patsy Thompson, Director of the Environmental  
14 Assessment and Protection Division, Ms. Kiza Munroe,  
15 Environmental Assessment Officer, and the rest of the CNSC  
16 licensing team for this environmental assessment project.

17 We're here this morning to present the EA  
18 Screening Report for the Shielded Modular Above-Ground  
19 Storage or SMAGS facility proposed by AECL for the Chalk  
20 River Laboratories site.

21 The EA Screening Report was prepared using  
22 the EA Study Report prepared by the proponent, AECL.

23 Both these reports, the Screening Report,  
24 plus the Study Report, were written using the modular  
25 above-ground storage or MAGS EA Screening Report as the

1 basis. And only supplemental information that could  
2 change the assessment has been considered.

3 This is consistent with the approach  
4 proposed in Section 24 of the CEA Act. The SMAGS EA  
5 Screening Report was written and accepted in 1999. If the  
6 SMAGS facility is approved for construction and eventual  
7 operations, it is intended to replace the previously  
8 proposed future MAGS buildings. The Staff does not have a  
9 formal presentation this morning, but is available to  
10 answer any questions Commission members may have on this  
11 proposal. Thank you.

12 **THE CHAIRPERSON:** Thank you, Mr. Lamarre.  
13 I will open the floor to questions to CNSC staff and AECL.  
14 Dr. Dosman?

15 **DR. DOSMAN:** Thank you. I have several  
16 questions.

17 First to AECL, the projected volumes that  
18 would be placed in the buildings, would you able to review  
19 for me just where they come from? I take it much of the  
20 debris is from the Chalk River site and also perhaps just  
21 review the projected volumes throughout the life period.  
22 I was wondering -- and also whether AECL was experimenting  
23 with any means to reduce volumes.

24 **MR. KUPFERSCHMIDT:** Thank you. The  
25 volumes for the MAGS are in the neighbourhood of around

1 six thousand cubic meters. Certainly we have had a number  
2 of activities and we continue, and we in fact plan to  
3 enhance our waste minimization activities.

4 I would note, for example, as part of our  
5 decommissioning activities for which the SMAGS will be  
6 used, we have certainly been able through other efforts to  
7 redirect in the neighborhood of around 90 per cent of the  
8 waste generated from the decommissioning of some of the  
9 buildings we've undertaken to down to clearance levels,  
10 but that can be available for normal landfill disposal,  
11 the other ten per cent, the type of waste that -- through  
12 the efforts that we've undertaken, could then be  
13 appropriate for placement in the SMAGS unit.

14 I believe there was another component of  
15 your question, Commissioner Dosman.

16 **DR. DOSMAN:** Where does the waste come  
17 from? (microphone not turned on).

18 **MR. KUPFERSCHMIDT:** Thank you. The waste  
19 comes from normal operations. For example lamp heads,  
20 clothing, protective clothing that are utilized in the  
21 day-to-day operations. Those type of activities or those  
22 type of items that are generated from the normal operation  
23 of our sites.

24 For some of the waste that have been  
25 traditionally sent to our bunkers say contain material as

1 well that have been radioactively contaminated as a result  
2 of their use on site.

3 **DR. DOSMAN:** I take it, Mr. Chair, if I  
4 might, that the material that's placed in the metal  
5 containers has been dried? Is there any danger of  
6 spontaneous combustion from any of the materials? Is  
7 there any experience in other areas, for example, the  
8 Western Waste Management facility with a fire in any of  
9 the -- I realize the containers here are different than in  
10 that location, but is there any fire danger in these  
11 containers?

12 **MR. KUPFERSCHMIDT:** For the record, Bill  
13 Kupferschmidt.

14 The risks associated with combustion is  
15 really quite low. The wastes are compacted and placed  
16 into closed, steel containers. The only ignition source  
17 that is potential as a result of the facility that brings  
18 the waste into the facility, and mitigation measures have  
19 been taken to ensure that that does not present a risk.

20 **DR. DOSMAN:** I note from the photos, in  
21 one of the photos given, which I take it are from the  
22 Western Waste Management Facility?

23 **MR. KUPFERSCHMIDT:** Yes.

24 **DR. DOSMAN:** There's no evidence of a  
25 sprinkler system. I take it the perceived risk of fire is

1 really very low and that's not deemed necessary?

2 **MR. KUPFERSCHMIDT:** For the record, Bill  
3 Kupferschmidt.

4 Again, the risk for fire is really quite  
5 low and appropriate elements have been incorporated into  
6 the design to deal with that particular issue.

7 **DR. DOSMAN:** It certainly looks like the  
8 issues have been covered.

9 I was just wondering if AECL, Mr.  
10 Kupferschmidt, or others -- I notice that one of the risks  
11 mentioned in the report is a burst package, and I'm just  
12 wondering if you could explain to me circumstances where a  
13 package might burst.

14 **MR. KUPFERSCHMIDT:** For the record,  
15 it's Bill Kupferschmidt.

16 This may result in fact if one of the  
17 containers you see being placed fell off the forklift and  
18 the container fell and the contents spilled, but I think  
19 I'll perhaps direct this question to Roger Lounsbury for  
20 further details. Roger?

21 **MR. LOUNSBURY:** For the record, Roger  
22 Lounsbury, Manager of Safety & Licensing for Projects.

23 The burst package scenario is being  
24 associated with how we get waste into steel containers.  
25 Before it goes into the SMAGS building some of the waste

1 is in bags and they need to be loaded into the steel  
2 containers in the waste handling building. So one of the  
3 scenarios is during manual loading of these bags, there's  
4 a handling accident and it's dropped or there is a failure  
5 of the bag, there is the potential for some release of  
6 material.

7 **DR. DOSMAN:** Is there any danger to the  
8 forklift operator or another personnel from radiation  
9 exposure? Presumably the levels of radiation exposure are  
10 quite low as outlined in the documentation.

11 **MR. LOUNSBURY:** Yes. This waste is low  
12 level waste with very low specific activity, so given the  
13 protective equipment that the personnel are wearing, the  
14 risk to them from failure of these bags is quite low.

15 **DR. DOSMAN:** I'm just wondering if Staff  
16 has any comment on this issue?

17 **MS. THOMPSON:** Patsy Thompson for the  
18 record.

19 You will see, Dr. Dosman, that in the  
20 Screening Report on Tab 9.4 which is on page 79, that this  
21 scenario has been assessed and levels of radioactivity and  
22 radiological exposure to workers has been assessed and has  
23 been found to meet regulatory requirements.

24 AECL does have a Radiation Protection  
25 Program for workers that will be in place for the

1 activities related to waste handling and waste storage at  
2 these facilities.

3 **DR. DOSMAN:** So presumably -- thank you.

4 And presumably the workers all have  
5 radiation masks and so on and are part of the regular  
6 training program that AECL would have for employees?

7 **MS. THOMPSON:** Patsy Thompson for the  
8 record.

9 That is correct. The full radiation  
10 protection program that AECL has in place will be in  
11 effect. It includes training and development of  
12 procedures for handling waste in situations like this.

13 **DR. DOSMAN:** Perhaps I could ask Staff, in  
14 your view, in the view of Staff, how safe is this system  
15 from a non-radiologic point of view, the manner in which  
16 the steel containers are stacked and piled and so on; is  
17 there any non-radiologic occupational health risk to  
18 workers on site from the way these are handled if they  
19 tend to slip off the forklift or so on; is there a view on  
20 this item from Staff?

21 **MR. LAMARRE:** I'll ask Mr. Don Howard to  
22 answer this question.

23 **MR. HOWARD:** Don Howard, for the record.

24 Basically in handling radioactive material  
25 in this nature, occupational health and safety is a



1 concern with any industrial site. Thankfully, experience  
2 has shown that at the Bruce Western Waste Management  
3 facility which manages its waste in a similar fashion,  
4 that with the proper procedures in place and training in  
5 place, that occupational health and safety is minimized as  
6 much as possible.

7 With AECL the expectation is, is that based  
8 on the experience that they've had in the MAGS operation,  
9 which they have currently two buildings and they are  
10 storing material in those two buildings using forklifts  
11 and other devices to stack the material, they have the  
12 procedures in place. The workers do go through training  
13 to ensure that they protect themselves from occupational  
14 health and safety and AECL does provide the necessary  
15 training and equipment to ensure their safety at all  
16 times.

17 Our CNSC Staff will conduct regulatory  
18 oversight during these operations to ensure that these  
19 procedures are in place and that the workers do follow the  
20 instructions and procedures that AECL is providing for  
21 their protection.

22 **DR. DOSMAN:** Thank you, I wonder if I  
23 might ask AECL.

24 In the stacking of these large steel  
25 containers, is there any manual activity at all involved

1 on the part of the workers or is the entire operation  
2 performed with a machine, with a forklift and so on?

3 **MR. KUPFERSCHMIDT:** For the record, Bill  
4 Kupferschmidt.

5 The actual placement of the steel  
6 containers are all done with the forklift.

7 **DR. DOSMAN:** Sir, may I ask, for example,  
8 the workers in this situation, are they required to wear  
9 safety boots, steel capped boots and so on as part of the  
10 -- I'm not saying they should, I'm just inquiring if they  
11 do, if that's a requirement?

12 **MR. KUPFERSCHMIDT:** For the record,  
13 Bill Kupferschmidt. Yes, they do and yes, they should.

14 **DR. DOSMAN:** And in the existing buildings  
15 do we know if there's been any incident of an injured  
16 worker in the process of placing these -- presumably the  
17 existing buildings do have similar sized steel containers  
18 or will this be a new process for AECL? Do you have any  
19 experience in the other buildings with containers of this  
20 size and and nature?

21 **MR. KUPFERSCHMIDT:** For the record, Bill  
22 Kupferschmidt.

23 Yes, we do have that experience and  
24 certainly within our facilities we have not had any issues  
25 with regard to worker hazards or worker injury.

1                   **DR. DOSMAN:**    I'm wondering, Mr. Chair,  
2                   just on the environmental side, perhaps I should defer to  
3                   another member of the Panel for other questions, but I'm  
4                   just wondering, obviously the site is some distance from  
5                   the Ottawa River and I'm just wondering if AECL would be  
6                   able to review for Commission members the confidence that  
7                   you have that this site will not result in any additional  
8                   hazard for radiation drainage into the Ottawa River.

9                   **MR. KUPFERSCHMIDT:**   Bill Kupferschmidt,  
10                  for the record.

11                  We are very confident that this will not  
12                  result in any additional releases to the river. The  
13                  current experience that we had with the operation of our  
14                  two MAGS units have demonstrated that this has not  
15                  presented a problem.

16                  As I've noted, these units will be placed  
17                  essentially -- very adjacent -- immediately adjacent to  
18                  the existing facilities that we have. We do regularly  
19                  monitor the -- what's called the mainstream, that is on  
20                  the downward side of the facility, and as part of our  
21                  intention for moving forward with the monitoring program,  
22                  we intend to place place additional sampling stations and  
23                  monitoring wells to in fact monitor immediately below this  
24                  facility and before you get to this mainstream if there  
25                  are any releases. But I would note that we have no

1 evidence with -- with part of our current program there  
2 is no reason to believe that there is any contamination of  
3 the mainstream that's down facility from this currently.  
4 With our current operation we do not anticipate with this  
5 facility that we will have -- that the situation will  
6 change.

7 **DR. DOSMAN:** Thank you. What's the  
8 potential out there as far as space? It seems to me you  
9 have a fair amount of space out there.

10 How far out into the future can you predict  
11 having space for continued accumulation of these wastes  
12 based on the current level of accumulation; and how do  
13 your future plans coincide with a continued  
14 decommissioning of buildings on site?

15 **MR. KUPFERSCHMIDT:** Bill Kupferschmidt, for  
16 the record.

17 Moving forward with these six SMAGS, the  
18 buildings that we constructed on an "as needed basis", we  
19 anticipate that this represents the low level radioactive  
20 waste storage for low-level radioactive waste over the  
21 course of the next 20 years.

22 **DR. DOSMAN:** And presumably AECL has the  
23 property there to accomplish this goal?

24 **MR. KUPFERSCHMIDT:** Bill Kupferschmidt, for  
25 the record.

1           The last slide I had shown you showed in  
2 fact the layout of the six units that provide the 20 year  
3 capacity of low-level radioactive wastes on the footprint  
4 that is already there.

5           So that footprint that was shown in that  
6 last slide of mine represents 20 years of storage of low-  
7 level radioactive waste.

8           **DR. DOSMAN:**   Is there any residential or  
9 other commercial development in the area that could impede  
10 future development?

11          **MR. KUPFERSCHMIDT:**   This is part of our  
12 licensed site and there is no commercial development that  
13 is envisioned on our site, so that does not present a  
14 particular challenge.

15          **DR. DOSMAN:**   I would like to ask one or  
16 two other questions, and that is on the issue of  
17 consultation.  And I was just wondering, I noticed that  
18 there is a letter from a nearby resident, and I was just  
19 wondering if AECL could review the process of consultation  
20 and communication with the community that's gone on in the  
21 context of this development?

22          **MR. KUPFERSCHMIDT:**   Bill Kupferschmidt,  
23 for the record.

24                 I will attempt to do so, and I may -- at  
25 the end I'll give an opportunity to Roger Lounsbury to add

1 anything that I may not be adding that he believes is  
2 important to add.

3 I guess let me first note, as was noted by  
4 CNSC Staff, that the establishment of the original MAGS  
5 units was the subject of considerable public consultation  
6 some years ago. Subsequent to this when the internal  
7 decision was taken that we would like to proceed with the  
8 Hewlett MAGS concept, written notification was issued to  
9 the CNSC in November of 2004. The guidelines were issued  
10 by the CNSC in 2005, May. We then began preparing a study  
11 report. We sent letters in approximately 2005, August, to  
12 interested parties, that is those that have expressed an  
13 interest in the project previously with regards to the  
14 MAGS projects and interest groups.

15 For example The Sierra Club of Canada,  
16 Concerned Citizens of Renfrew County, Green Peace, the  
17 First Nations' people, other elected officials and local  
18 media.

19 In fact a letter describing the project was  
20 in fact developed and processed and made available in our  
21 local nearby community, and we did receive a letter of  
22 support from the Deep River Council.

23 In December of 2005 AECL submitted its  
24 final Screening Report to the CNSC. This report reflected  
25 the comments provided by the CNSC and federal departments.

1 The CNSC then declared the Screening Report based on  
2 AECL's submission and the CNSC sent the report to the  
3 federal departments and conducted its own public  
4 consultation process which just recently ended.

5 As part of this the report was posted on  
6 the CNSC website for 30 days and notification of the  
7 review period was also posted to the CEA website. I think  
8 that represents, I think the process that was followed and  
9 the various steps that were taken.

10 I would just turn it to Roger Lounsbury if  
11 there were any elements that should be added to that.

12 **MR. LOUNSBURY:** Roger Lounsbury, for the  
13 record.

14 The one item I might add, is that after we  
15 sent these letters around one of the local media picked  
16 this up and it generated an article in the Pembroke  
17 Observer, a local newspaper. So this also provided an  
18 additional opportunity for a wide audience to become aware  
19 of the project and AECL's involvement in it.

20 **DR. DOSMAN:** Thank you.

21 **THE CHAIRPERSON:** Does Staff have any  
22 additional comments they wish to make on that?

23 **DR. DOSMAN:** I appreciate that, Mr. Chair.

24 (SHORT PAUSE)

25 **MR. LAMARRE:** I'm sorry Mr. Chair, for the

1 delay. I'll ask Ms. Kiza Munroe to answer that question.

2 **MS. MUNROE:** Kiza Munroe for the record.

3 What AECL has presented is pretty  
4 comprehensive. It was done on both their part and our  
5 part.

6 As Dr. Dosman mentioned, we did receive one  
7 letter from a citizen within the area that wasn't directly  
8 related to this particular project, but more on the site  
9 and the nuclear facilities as a whole. It did not result  
10 in any change in the Screening Report although we did  
11 address the comment in the Screening Report.

12 **DR. DOSMAN:** Just a couple of other  
13 questions.

14 There's a comment about the social  
15 components and I realize that -- I wonder if AECL has any  
16 comment on the archaeological significance of the  
17 development.

18 I realize it's more an N.R. use site where  
19 there was a former archeological site, and I just wonder  
20 whether AECL has any comments on the archeological issue  
21 involved. It comes up in the Screening Report.

22 **MR. KUPFERSCHMIDT:** Bill Kupferschmidt,  
23 for the record.

24 We in fact have recently completed a  
25 significant study on this and I'll pass the floor to Dr.



1 Bruce Lange who has more of the details.

2 **MR. LANGE:** For the record, Bruce Lange.

3 Yes, it's interesting you pose that  
4 question. We have over this last summer, we've had a team  
5 of archeological experts come in, both some of our people  
6 and outside experts, and we've asked the same question:  
7 "To what extent are there archeological areas of interest  
8 on the Chalk River site?"

9 The Chalk River site was homesteaded.  
10 There were farms in the area; there was a number of  
11 buildings located on the Chalk River site. And one of the  
12 things in fact that we were looking for, was grave sites  
13 and there are indeed some grave sites located in the Chalk  
14 River site. It also was a major stopping point and  
15 actually still is for boat traffic and canoe traffic and  
16 there's a lot of artifacts found down there.

17 So some of the conclusions are that a lot  
18 of the areas that might have been -- that were  
19 archeologically impacted, have been disturbed over time.  
20 The grave sites are now marked and registered and the area  
21 has been well characterized in terms of archeological  
22 potential.

23 The region where this SMAGS building will  
24 be located is quite a ways back from the river and,  
25 therefore, the extent of archeological interest in that

1 particular part of the site is very low. The primary  
2 areas of interest do lay within or along the riverbank  
3 itself.

4 **DR. DOSMAN:** But I take it (Microphone  
5 turned off) on the site that's under development for the  
6 SMAGS?

7 **MR. LANGE:** That is correct. And in fact  
8 as Dr. Kupferschmidt pointed out, the site has already  
9 been developed and cleared. Area "H" was established as  
10 part of the MAGS project. At that time the site was  
11 deforested, cleared, the roots removed, blasting was  
12 carried out to remove some of the bedrock and so at this  
13 point in time there won't be any further disturbance of  
14 the area. We will just simply utilize the space that's  
15 already been created for the MAGS structures.

16 **DR. DOSMAN:** Thank you. And I wonder if I  
17 might ask Staff. I noticed that consultation was carried  
18 out with the Ontario Ministry of the Environment and also  
19 with a number of federal departments, and I'm just  
20 wondering if there's been any feedback from Ontario or  
21 from the federal departments involved

22 **MS. MUNROE:** Kiza Munroe for the record.

23 The Ministry of the Environment was  
24 contacted to ensure that Ontario Environmental Assessment  
25 was not required and they confirmed that the provincial

1 environmental assessment was not required for this and  
2 that was the answer that they gave us.

3 **DR. DOSMAN:** Mr. Chair, may I inquire  
4 about federal departments?

5 **MS. MUNROE:** Kiza Munroe for the record.

6 Federal Departments were included in the  
7 assessment and provided quite a bit of feedback in the  
8 technical review of the Study Report. Environment Canada  
9 and Health Canada contributed quite a few comments and  
10 those are in the Dispositioning Table at the back of the  
11 Screening Report and they were also included in the  
12 revision of our Screening Report as well.

13 **DR. DOSMAN:** And for the record, are those  
14 departments satisfied with the project?

15 **MS. MUNROE:** Kiza Munroe for the record.

16 There was dialogue that went back and forth  
17 between the CNSC and AECL and the federal departments  
18 until a concurrence was had between all departments.

19 **DR. DOSMAN:** Thank you.

20 There was an issue, a modest statement  
21 about quality assurance, and I wasn't sure from AECL  
22 whether quality assurance documents have been prepared or  
23 are under preparation. And I'm just wondering whether  
24 AECL might be willing to comment on that issue.

25 **MR. KUPFERSCHMIDT:** Bill Kupferschmidt,

1 for the record.

2 I think I'll respond to that and again ask  
3 Dave Cox when I'm finished, to add anything that I may  
4 miss.

5 I would note that as part of this  
6 particular project, procurement will be procured to CSA's  
7 standard to 286.1; design procured to CSA and 286.2;  
8 construction to the CSA standards and 286.3; commissioning  
9 with the facility when we have the facility constructed  
10 will be to CSA and 286.4.

11 I would note that this and other projects  
12 that are led by the project management organization, which  
13 was the subject of some discussion yesterday at the  
14 license renewal hearing for Chalk River.

15 If continually utilizing these procedures,  
16 I have a very strong QA program in place and have a very  
17 extensive audit and self-assessment program from a quality  
18 QA perspective.

19 I will just turn it to Dave Cox if there  
20 are some elements that he believes should be brought to  
21 the attention of the Commission.

22 **DR. DOSMAN:** Thank you.

23 **MR. COX:** For the record, Dave Cox.

24 I don't have much to add beyond what Dr.  
25 Kupferschmidt has provided except to say that the QA

1 Program for execution of projects of this type which  
2 involves modification or construction of nuclear  
3 facilities, are subject to regular audit, internal and  
4 external, and as well a rigorous self-assessment process.  
5 And the results of those audits confirm that it is a  
6 strong and valid QA program in place, and as well for the  
7 activities associated with procurement and construction  
8 design and commissionings of facilities of this type, we  
9 have a 286 Program in place.

10 **DR. DOSMAN:** Mr. Chair, do I take it that  
11 the quality assurance program, the documents are prepared  
12 or are they being prepared for the operation of the new  
13 SMAGS?

14 **MR. KUPFERSCHMIDT:** For the record, Bill  
15 Kupferschmidt. I'll defer that question to Dave Cox.

16 **MR. COX:** Dave Cox for the record.

17 The quality program documentation is all in  
18 place for the execution of this project. The operating  
19 procedures are in preparation and will be completed as  
20 part of the application for operating approval.

21 **DR. DOSMAN:** I wonder if I might ask CNSC  
22 Staff if Staff has any comment on the quality assurance in  
23 preparation of both the preparation, the building of the  
24 site and the operation of the site?

25 **MR. LAMARRE:** Greg Lamarre, for the

1 record.

2 Staff doesn't have any comments at this  
3 point, but rest assured that those elements will be looked  
4 at when we come back if a favorable decision is taken on  
5 this EA Screening Report at the time of the licensing  
6 approval for the eventual construction of this facility.  
7 That will be one of the key programs that we'll be looking  
8 at, both in terms of our licensing review and also  
9 importantly as part of our ongoing compliance program  
10 given that Waste Management Area "H" is one of the  
11 significant facilities on site as we go forward.

12 **DR. DOSMAN:** I'm wondering if I might ask  
13 Staff if you have any points that Staff would like to make  
14 or concerns that you have that are not brought out in the  
15 documentation?

16 **MR. LAMARRE:** Greg Lamarre, for the  
17 record.

18 No, we have no further comments beyond  
19 what's in the CMD and we do have no concerns and we stand  
20 by the recommendation of this project as it goes forward,  
21 not resulting in any significant adverse consequences on  
22 the Environment.

23 **DR. DOSMAN:** And I'm just wondering if  
24 AECL has any additional comments you'd like to make on any  
25 of the matters and documentation and so on or any comment

1 on Staff's documents?

2 **MR. KUPFERSCHMIDT:** Bill Kupferschmidt,  
3 for the record.

4 No comments to add to that which we've  
5 already stated.

6 **DR. DOSMAN:** Thank you, Mr. Chair.

7 I'll turn the questions over to the other  
8 member of the panel.

9 **THE CHAIRPERSON:** Thank you, Dr. Dosman.

10 Dr. Dosman has covered many of the issues  
11 here today. I'll have some residual ones and I'll  
12 probably jump around to sort of fill in.

13 I note that on page 16 on 7.2, this is just  
14 a comment just to address the significance I think of what  
15 is being proposed here:

16 "... will increase radionuclide inventories stored in  
17 Waste Management Area 'H' by ... three orders of  
18 magnitude."

19 And further, that tritium represents 70 per cent of the  
20 radionuclide inventory. So this is a pretty significant  
21 event that we're doing for the next 20 years of low-level  
22 radioactive waste storage.

23 And, that ultimately this will provide  
24 21,670 cubic meters for post compacted waste. So we're at  
25 the beginning of a very significant development here.

1           And, clearly, from the information provided  
2           where we're looking at sort of a low tech system for low  
3           level waste nevertheless given the scale of it and the  
4           durations we're looking at, I think it behooves us to make  
5           sure that all this is in fact safely done and that some of  
6           the remote issues are in fact addressed even though they  
7           remain as remote hazards or threats.

8           I'll start off by asking just a couple of  
9           questions that I asked at yesterday's hearing because I  
10          think it pertains here. And I think for the record I'd  
11          just like to ask the question because what is being  
12          proposed here is to have six large buildings made on a  
13          concrete base, reinforced with a concrete wall and a  
14          concrete ceiling and filled with floor to ceiling, five  
15          meters high of compacted waste. So the substantial weight  
16          is being place on the -- right here. So perhaps you could  
17          comment on the geo-technicals, or foundations that have  
18          been done really for the site. I mean I understand that  
19          you're putting these in, perhaps one building at a time,  
20          but nevertheless the diagram that you show, shows that the  
21          buildings will be very closely spaced, in fact relative to  
22          each other.

23          So given that and perhaps tied to the  
24          second issue here, which is the Seismic Hazard Assessment  
25          that would also impact on the potential foundation



1 failures or cracks and so on.

2 **MR. KUPFERSCHMIDT:** Bill Kupferschmidt, for  
3 the record.

4 I'd ask Dave Cox to follow-up in detail  
5 with regard to your particular question.

6 **MR. COX:** For the record, Dave Cox.

7 Geo-technical evaluations were conducted of  
8 the site for Waste Management Area "H" which confirmed the  
9 suitability for buildings of this type. The design of the  
10 buildings themselves incorporate, as you've noted, a  
11 substantial concrete foundation which is reinforced and  
12 which is designed to accommodate the loads of these  
13 stacked containers in a manner that's consistent with the  
14 seismic requirements of the Chalk River site and the  
15 seismic zoning that's appropriate there.

16 The foundation in the buildings themselves  
17 are enhanced in terms of seismic capability relative to  
18 the designs constructed by OPG because of the difference  
19 in the seismic zone at Chalk River relative to the Bruce  
20 site.

21 There's a geo-textile membrane that's below  
22 the foundation which is in place to provide an additional  
23 barrier to any releases that might emanate from the  
24 facilitate over it's lifetime. The design life of the  
25 buildings is 50 years and the construction of the design

1 will be inspected during the course of construction in  
2 order to ensure that the key parameters that ensure the  
3 design intent will be met.

4 **THE CHAIRPERSON:** Thanks. I think there  
5 will be an opportunity during the licensing for the  
6 construction to ask more detailed questions about that. I  
7 notice, and I think it came up yesterday in a further  
8 question about the groundwater and monitoring wells which  
9 is, as far as I know, were not really mentioned in this or  
10 even indicated in this particular document, but the answer  
11 yesterday was -- from AECL was that there would be a  
12 network of groundwater monitoring wells and so on.

13 I notice in the -- oh just in terms of the  
14 seismic hazard, and I would notice, perhaps on a technical  
15 basis, on page 27 8.1.4., which is a section describing  
16 the physiography and topography of this ground and  
17 structure, followed by a section on geology.

18 There is a quote that says:

19 "No major movement along the fault system is believed to  
20 have occurred over 500 years ..."

21 And the reference is the Siting Task Force (1995) Deep  
22 River, Initial Assessment.

23 I think this is actually incorrect. There  
24 may well have been a fault system generated in the bi-  
25 precambri movement. I think most of the Ottawa-Bonnechere

1 Graben is really a feature of the opening up of the  
2 Atlantic Ocean and this is a failed risk system of  
3 cretaceous age, about 80 million years, so the impression  
4 that it's been 500 years of no fault systems, I think is  
5 incorrect. It may be something that you, if you're likely  
6 to record this in the licensing for construction, you  
7 might just want to double check on that.

8 Basically all the most recent hills in the  
9 Montreal area are a result of that same tectonic processes  
10 that took place in cretaceous time and those are well  
11 dated.

12 Just in terms of the internal packing of  
13 the metal containers, I notice that one meter is allocated  
14 around the margins. So do I get the correct impression  
15 that virtually the whole volume of each of these buildings  
16 is going to be kind of wall to wall steel containers with  
17 virtually no space between the containers, so the only  
18 area for people to move within it would be the one meter  
19 around or are there sort of narrow avenues periodically  
20 within the building as opposed to just the perimeter?

21 **MR. KUPFERSCHMIDT:** Bill Kupferschmidt,  
22 for the record.

23 The waste containers will certainly be  
24 closely arranged, but I will have Dave Cox perhaps follow  
25 up on that with regard to the specifics.

1                   **MR. COX:** For the record, Dave Cox.

2                   The final end state of the fully loaded  
3 building would indeed be the entire filled building with a  
4 one meter perimeter around the outside. But that's just  
5 the final end state.

6                   Of course during the interim period of  
7 loading the buildings, which would be over about a four  
8 year period, there will be avenues as the loading strategy  
9 would be based on the activity levels of the various  
10 containers. And so there will be radiological zones in  
11 the building and loading would be commensurate with the  
12 fields and requirements for worker protection and the  
13 application of Alara to the approach used to load the  
14 containers.

15                   So the final end state would be one meter  
16 around the outside, but that would only be at the final  
17 end of the loading operation.

18                   **THE CHAIRPERSON:** In response to one of  
19 Dr. Dosman's questions about burst containers and so on, I  
20 was more thinking about the potential, even though it may  
21 be remote, for some of the steel containers to burst over  
22 time over the decades in which this will be stored,  
23 particularly the poor containers at the bottom of a five  
24 meter pile. So how would you, if this were to occur,  
25 let's say one or two of these were to fail over time, how

1 would you know and how would you be able to repair them,  
2 those particular containers?

3 **MR. KUPFERSCHMIDT:** Bill Kupferschmidt,  
4 for the record. I'll direct that question to Tim  
5 Williams.

6 **MR. WILLIAMS:** For the record, Tim  
7 Williams, Project Manager.

8 These containers are certified in the U.S.  
9 DOT. To become certified they go through a lot of  
10 testing, qualification testing. We're not expecting them  
11 to fail. They're certainly designed to withstand -- the  
12 ones at the bottom of the pile can easily withstand the  
13 total load of the fully loaded facility which is stacked  
14 five high. Your question about if one failed, that is a  
15 good question. We haven't particularly addressed that  
16 issue. Of course if we were to have to deal with it, we  
17 would have to remove the containers from around it. And  
18 as this is low level waste, we don't see that this would  
19 be causing us any particular work issues in terms of  
20 dosages that weren't fairly easily surmountable. Thank  
21 you.

22 **MR. KUPFERSCHMIDT:** Mr. Chairman, if we  
23 could perhaps add to that?

24 I guess I would note -- and I'll perhaps  
25 direct in a minute to Dave Cox as well, that we certainly

1 do have considerable experience with these types of  
2 containers for other waste that we have on site that are  
3 placed at another location to the tune that some of these  
4 containers have certainly lasted 30 years, but I would  
5 turn the question over to Dave Cox to elaborate further.

6 **MR. COX:** Dave Cox, for the record. Just to  
7 add to what Mr. Williams indicated.

8 We have substantial operating experience  
9 with these types of containers through their use in the  
10 MAGS facility and a prior use. And we were also in close  
11 contact with the operators of the Western Waste Management  
12 Facility operated by OPG for which they have even a longer  
13 operating experience on the types of containers that are  
14 used there which extends more than 22 years.

15 As well during the loading operations  
16 there's inspection of the condition of the containers as  
17 part of an operational activity. So we believe that with  
18 confidence we can rely on the designed integrity of the  
19 containers but that will be supplemented by observation of  
20 the condition of the containers during the operating state  
21 of the facility.

22 **THE CHAIRPERSON:** Do you have the capacity  
23 for sort of video surveillance across the top of the pile  
24 if there was any sort of collapse at any point?

25 **MR. KUPFERSCHMIDT:** Bill Kupferschmidt,

1 for the record.

2 That capability is not envisioned for this  
3 facility.

4 **THE CHAIRPERSON:** I notice on a different  
5 issue that -- well, let me put it in terms of a question.

6 You addressed the situation when power  
7 fails and they do not have heating, but there is -- there  
8 are ventilation and fire detection systems that depend on  
9 power. Do you have any auxiliary power backup systems for  
10 the six buildings being proposed?

11 **MR. KUPFERSCHMIDT:** Bill Kupferschmidt,  
12 for the record. I'll ask Dave Cox to answer that  
13 question.

14 **MR. COX:** Dave Cox, for the record.

15 There's a UPS system on the fire protection  
16 system that's incorporated in the design of the building.  
17 The ventilation itself only operates when staff -- or  
18 prior to staff entering the building. The ventilation  
19 system would not have UPS, but the fire protection system  
20 does.

21 **THE CHAIRPERSON:** And does Staff feel this  
22 is a satisfactory situation?

23 **MR. LAMARRE:** Greg Lamarre for the record.  
24 I'll ask Mr. Don Howard to answer the question.

25 **MR. HOWARD:** Don Howard, for the record.

1                   Based on operating experiences that we have  
2                   said that we have with the Bruce Western Waste Management  
3                   facility, which these S-MAGS are basically based on the  
4                   same concept. Essentially the primary concern is a fire  
5                   protection system. Ventilation is only a secondary system  
6                   where prior to entering it's activated to ensure worker  
7                   protection at that point. So we would want to ensure that  
8                   in the event of a loss of electrical power, that there is  
9                   some form of back-up system for the fire protection system  
10                  itself.

11                   **THE CHAIRPERSON:**    If there was a fire,  
12                  then you'd have firemen and you'd also need to be  
13                  concerned about the ventilation. So perhaps what you're  
14                  saying is that the two go hand in hand in certain  
15                  circumstances?

16                   **MR. HOWARD:** Don Howard, for the record.

17                   I guess we have to look at the buildings  
18                  and the containers and the waste that we're dealing with.  
19                  Essentially the waste itself is in a compacted form. The  
20                  waste is then placed into metal containers which have lids  
21                  on them. There is not very much combustible material  
22                  outside of that within the building itself.

23                   If a fire was to occur in a bin itself, it  
24                  would primarily be localized within that bin. The spread  
25                  of a fire -- again, I'm not a fire specialist, but I don't



1       foresee it expanding too far. They do have on-site fire  
2       capabilities who are trained in radiation protection who  
3       have a very quick response times to address any such  
4       incidents.

5                   **THE CHAIRPERSON:**    On page five in Table  
6       2.1, which is the table dealing with the Waste  
7       Classification by Storage Facility and the Annual Waste  
8       Volumes and Total Activity, I notice that the last item on  
9       there, which is "Waste Management Area "B" Tile Hoes", the  
10      material coming from that area represents two per cent of  
11      the volume being stored here, but 99 per cent of the total  
12      radioactivity.

13                   Can AECL indicate how material with that  
14      increased radioactivity is going to be packaged; is it  
15      going to be put in as its received into the new storage  
16      system? Is it going to be put in one area or is it going  
17      to be deliberately dispersed throughout the system?

18                   **MR. KUPFERSCHMIDT:**    Bill Kupferschmidt,  
19      for the record. Dave Cox will respond to that question.

20                   **MR. COX:** I believe you're referring to the  
21      bottom row in Tab 2-1?

22                   **THE CHAIRPERSON:**    Correct.

23                   **MR. COX:** That entry refers to the  
24      materials that are stored in tile holes in Waste  
25      Management Area "B", and those materials not are destined

1 to be transferred nor stored in the Shielded MAGS  
2 facility. They were presented in this table in order to  
3 provide an appreciation for the nature of the  
4 radioactivity of all the waste stored at the Chalk River  
5 site.

6 A small volume in a large fraction of the  
7 total activity is the waste in the first and second rows  
8 of that table that would be destined for placement in the  
9 Shielded MAGS facility.

10 **THE CHAIRPERSON:** Okay. I read that table  
11 differently. My error, but maybe others might have read  
12 it the way I did too. So I'm not sure it's sufficiently  
13 clear, but I thank you for the clarification on that.

14 Could you just address, AECL, the degree to  
15 which air contamination within the building is a  
16 significant issue over time, the build-up of emissions  
17 that would be hazardous to workers and so on?

18 **MR. KUPFERSCHMIDT:** Bill Kupferschmidt,  
19 for the record. Bruce Lange will respond to that  
20 question.

21 **MR. LANGE:** Yes, for the record, Bruce  
22 Lange.

23 During the preliminary period of operation  
24 within the SMAGS building we will be taking air samples  
25 for such things as tritium concentration to evaluate the

1 extent to which there may be airborne contamination.

2 Similar studies in the MAGS building have  
3 indicated that there's little or no contamination here,  
4 airborne contamination within that facility, but we'll  
5 also confirm that situation during the initial operating  
6 period of the SMAGS building.

7 **THE CHAIRPERSON:** I noticed on page 18  
8 where you address that issue, the readings are proposed to  
9 be monthly, and I wondered if that is adequate if there  
10 was a period where there was a build-up in terms of a  
11 worker's health here, whether that is an adequate level of  
12 monitoring or whether you're proposing that that is the  
13 period of monitoring after the building is full or --  
14 it's not very clear to me.

15 **MR. KUPFERSCHMIDT:** Bill Kupferschmidt,  
16 for the record. Bruce Lange will respond to that  
17 question.

18 **MR. LANGE:** For the record, Bruce Lange.

19 I would like to also -- just to underscore  
20 that in terms of worker dose, we, of course, will turn on  
21 the ventilation before anyone enters the SMAGS buildings.  
22 So any immediate build-up within the building would be  
23 addressed in that fashion.

24 The monthly sampling is in the context of  
25 things like tritium, the tritium bubblers go all the time

1 and so the air is bubbled through a liquid trap and then  
2 sampled. So the monthly sampling is based upon the sample  
3 sizes taken from the bubblers. But there will be routine  
4 checking for surface contamination, the airborne monitors  
5 will be checked, and that is primarily the bubblers, and  
6 routinely, as required by the Environmental Monitoring  
7 Program, we will carry out those kind of evaluations.

8 **THE CHAIRPERSON:** And given the area and  
9 leading up to six of these, will there be also a  
10 monitoring a further distance from the site, particularly  
11 for tritium outside of the building?

12 **MR. KUPFERSCHMIDT:** Bill Kupferschmidt for  
13 the record.

14 The sampling that will be done will be  
15 that as part of our environmental protections program  
16 that we have in place.

17 **THE CHAIRPERSON:** On page 19 and 20, the  
18 issue of criticality was addressed. And, again, we're  
19 dealing with an extremely remote situation, but this was  
20 one of the issues addressed in responses by other  
21 agencies, including one on the very last page from Health  
22 Canada. And I noticed that the response from Staff, so  
23 this is a question to Staff, was that it really wasn't an  
24 issue because you're really addressing the threat to off  
25 site personnel. But since we've got 2000 workers working

1 on site, I'm not sure -- their response is on the very  
2 last page of the whole document. And your last paragraph  
3 under your response was:

4 "Even in the extremely unlikely event of a criticality  
5 accident at the facility, the consequences to people off  
6 site would not be significant."

7 And it seems to me that that was -- given that there's  
8 2000 people working on site, that that answer was not  
9 complete. Would you like to re-assess your response  
10 there? That's under Health Canada HD-1, the middle  
11 component on the very last page of the Screening Report.

12 **MS. MUNROE:** Kiza Munroe, for the record.

13 You are correct and we should be mentioning  
14 the people on site. The response was, of course, to  
15 Health Canada whose mandate is for off site, for people of  
16 the general public. For future we should probably be  
17 including people on site in that response as well. Thank  
18 you.

19 **MR. LAMARRE:** And if I may, Greg Lamarre  
20 for the record, just reiterate that criticality safety  
21 will be one of the safety program areas that will be  
22 explicitly assessed as part of licensing review if this  
23 project should go to the construction phase.

24 **MR. KUPFERSCHMIDT:** Mr. Chairman, could I  
25 also interject to complete the issue?

1                   **THE CHAIRPERSON:**     Please.

2                   **MR. KUPFERSCHMIDT:** I think it's important  
3                   to note as well that, really, we are talking about traced  
4                   quantities that would be so diluted to really effectively  
5                   preclude any possibility of criticality, but over and  
6                   above that, we have a process and control systems in place  
7                   to preclude the shipment of fissile material to the  
8                   facility.           We have a nuclear materials management  
9                   program that provides for detailed accounting of the  
10                  nuclear that will be going into that facility. So there  
11                  is a support program to provide that added assurance to  
12                  the Commission.

13                  **THE CHAIRPERSON:**     I agree this is a very  
14                  remote and Staff says extremely unlikely event, I just  
15                  wanted to point out that if it were to occur, then it is a  
16                  hazard to the 2000 people, and particularly because some  
17                  of those 2000 people would wish to be continuing to work  
18                  on site managing some of the facilities. They simply  
19                  couldn't walk away from them and so I'm not sure it was  
20                  adequately addressed there.

21                  I think almost finally, the follow-up  
22                  program component, which I think is always an important  
23                  issue, maybe just a question to Staff. This is on page  
24                  81, 10.0 "Follow-up Program."

25                  There's a number of comments made, but

1 they're brief - on this section here, and a number of the  
2 comments pertain to further monitoring activities  
3 performed under the various programs. Are you satisfied  
4 that the detail provided here on follow-up programs is  
5 adequate or that basically they're going to be considered  
6 under the construction licensing process? But as far as  
7 the Screening Report is concerned ---

8 **MS. THOMPSON:** Patsy Thompson for the  
9 record.

10 The practice has been in Screening Report  
11 to identify elements that will need to be monitored and at  
12 the time -- if this goes to licensing, then the  
13 expectation would be that a more detailed follow-up  
14 program with the elements and the detailed program would  
15 be provided and what we would normally recommend to the  
16 Commission is a license condition requiring the licensees  
17 to develop a monitoring and follow-up program acceptable  
18 to the Commission or Commission Staff.

19 **THE CHAIRPERSON:** Can I ask? What do you  
20 see as the issues relating to additional or ongoing  
21 monitoring?

22 **MS. THOMPSON:** Patsy Thompson for the  
23 record. I will ask Dr. Glen Bird to provide additional  
24 comments.

25 **MR. BIRD:** In reviewing the proposal for

1 the S-MAGS, the Environment Staff were of the opinion that  
2 ongoing monitoring has to be provided to monitor levels of  
3 contaminants that may accumulate in terrestrial vegetation  
4 that surround the facility. And we discussed this with  
5 the Staff and they were in agreement that it would include  
6 soil and terrestrial vegetation sampling, plus there is  
7 some monitoring of emissions from the compactor. What was  
8 of particular concern, is when they were compacting the  
9 waste to be put into the steel bins, that there might be  
10 emissions to the atmosphere. Although these were a very  
11 small percentage of the DRLs. The DRLs are based on  
12 dosages to humans some distance from the site. And we  
13 were concerned about the accumulation of contaminants  
14 potentially in the future nearby, so we recommended  
15 sampling of both the soils, the terrestrial vegetation to  
16 see if this was occurring.

17 **THE CHAIRPERSON:** And when will this --  
18 maybe this is a question to the licensee.

19 When will this start, in such a way that  
20 you have some baseline data prior to the filling of the  
21 first S-MAGS facility?

22 **MR. KUPFERSCHMIDT:** Bill Kupferschmidt.  
23 Decommissioning and waste management, I  
24 will ask Martin Klukas to respond to that question.  
25 Martin?



1                   **MR. KLUKAS:**     For the record, Martin Klukas  
2 speaking, the Environmental Assessment Coordinator for the  
3 Chalk River site.

4                   For the record, vegetation sampling and  
5 soil samples were collected at the site in 1990, prior to  
6 initiation of the MAGS project. These showed no elevated  
7 contamination levels.

8                   As well I know that monitoring of soil and  
9 vegetation is undertaken as part of our environmental  
10 protection monitoring program.

11                   **THE CHAIRPERSON:**   Thanks. Just a final  
12 question from myself.

13                   In your first diagram, which was the flow  
14 chart of low-level radioactive waste, on the bottom right  
15 hand corner where you had a cross severing bunker storage,  
16 but the note below bunker storage was:

17                   "A low volume waste stream will continue to be stored in  
18 bunkers."

19                   So the question is, why? How much? For how long?

20                   **MR. KUPFERSCHMIDT:**       Bill Kupferschmidt  
21 for the record.

22                   One of the types of waste that would be  
23 continued to be stored in the bunker are wastes associated  
24 with the concentration of the radioactive materials as  
25 part of the processing of liquid waste from the sites or

1 the waste treatment centre. Those wastes are  
2 consolidated, solidified and then would be placed in here  
3 because of the higher radiation exposures, they would not  
4 be appropriate for being inplaced in the SMAGS as part of  
5 the current provisions that we have.

6 **THE CHAIRPERSON:** Thank you. Dr. Dosman,  
7 do you have any further questions?

8 **DR. DOSMAN:** Yes, Mr. Chair, I have one  
9 additional question in my mind.

10 Where inside are the steel containers  
11 filled and closed and how are they closed? And does the  
12 filling process pose any additional risk to workers out of  
13 AECL?

14 **MR. KUPFERSCHMIDT:** You certainly may.  
15 For the record, Bill Kupferschmidt. I'll direct that  
16 question to Bruce Lange who has knowledge of that process.

17 **MR. LANGE:** Yes, for the record, Bruce  
18 Lange.

19 The waste is transported out to a building  
20 that is part of Waste Management Area "B", what we call  
21 the "waste handling building." If you've been to the  
22 site, it's a big blue building just before you enter Waste  
23 Management Area "B".

24 That building allows two activities to take  
25 place. First of all the waste is sorted and placed into

1 various steel bins. That material that is compactable is  
2 then placed into -- what we call a "B-1000", which is a  
3 large steel container that goes into the high forced  
4 compactors. So the waste handling building which was  
5 built as part of the project to establish waste manage in  
6 Area "H" and the MAGS concept, is what is created say at  
7 the same time to provide a new modern facility licensed  
8 and reviewed by the Safety Review Committee for the  
9 loading of these steel containers.

10 **DR. DOSMAN:** Part of my question was, how  
11 are these containers closed?

12 **MR. LANGE:** Bruce Lange for the record.  
13 There's two systems. If it's non-  
14 compactable waste, and that is large pieces of metal or  
15 lathed or something like that, that would not be suitable  
16 for putting in the high forced compactor, we just simply  
17 bolt a lid in place on top of the steel container.

18 In the case of the high forced compactor,  
19 we use kind of a double mechanism. One is something  
20 called a "springback." And that is, when we put waste  
21 into the container, we put a -- this device called a  
22 "springback" which only goes in one direction. So as the  
23 compactor compacts the waste, it keeps it from springing  
24 back, hence the name.

25 After the steel box is full then we again

1 remove it and put a cover in place, bolt it in place and  
2 then move it onto Waste Management Area "H".

3 **DR. DOSMAN:** Does AECL have any R&D going  
4 on to further -- to study ways and means of further  
5 reducing waste or compacting it more extensively and so on  
6 and perhaps in ways that haven't been thought of to date?  
7 It seems to me that what you're looking at here, over an  
8 extended period of time, is really a very, very extensive  
9 accumulation of low level waste, bulky and so on. What  
10 R&D is AECL conducting to think of new and better ways to  
11 handle low-level waste?

12 **MR. KUPFERSCHMIDT:** I'll make one comment  
13 and then again I will pass it on to Bruce Lange to follow-  
14 up on.

15 But as part of the comprehensive  
16 preliminary decommissioning plan that was the subject of  
17 some discussion yesterday, one of the facilities that we  
18 want to establish going forward is in fact an incinerator.  
19 So some of these wastes may in fact be the subject, after  
20 we go through the process, and ensure that we have public  
21 acceptance of that, then these are wastes that are  
22 potentially incinerable.

23 And with regard to R&D activities, I'll  
24 turn it over to Bruce to follow-up.

25 **MR. LANGE:** For the record, Bruce Lang.

1 Bill is absolutely right. We would dearly  
2 love to establish an incinerator because I think that's a  
3 very effective way of dealing with these wastes. It does  
4 a lot of good things for the process. It reduces the  
5 volume, it converts the waste to a relatively homogenous  
6 waste form that we can monitor and analyze well. It  
7 removes the organics which often contribute to the  
8 migration of radionuclides. So there's a great deal of  
9 advantages in considering the incinerator.

10 I'm not sure I'd call it R&D, I think it's  
11 something that we would definitely purchase from a vendor  
12 of incinerators.

13 In addition to the incinerator facility,  
14 one of big efforts in the future will be the use of what  
15 we call the "Waste Analysis Facility", which Dave Cox is  
16 also involved with. This will allow us to take a lot of  
17 the waste that is now going out to this area that I talked  
18 -- this building that I talked about, and we will further  
19 analyze it and segregate it to effect a separation of the  
20 contaminated material from the material that is not  
21 contaminated.

22 We believe that a relatively large  
23 proportion of the waste that is currently being put into  
24 these steel containers, is in fact not contaminated. But  
25 because it's suspect in nature from the source that it's

1 coming from, we treat it in a conservative fashion and  
2 treat it as if it were radioactively contaminated.

3 With a new waste analysis facility we'll  
4 have a rigorous procedure for sorting through this waste,  
5 separating the contaminated from the non-contaminated.  
6 The non-contaminated will be dealt with in a fashion  
7 that's in line with release criteria. And then only the  
8 contaminated material will go to the SMAGS buildings or  
9 other facilities.

10 So we really have two very significant  
11 efforts to address this. One is the segregation process  
12 and, secondly, is the thermal processing process. I know  
13 there's some sensitivities around the word "incinerator",  
14 and in fact this will -- should very much address the  
15 volume of waste currently being generated.

16 **DR. DOSMAN:** Thank you for that  
17 information.

18 **THE CHAIRPERSON:** Any further comments  
19 from either AECL or staff on this matter?

20 **(SHORT PAUSE)**

21 **MR. LAMARRE:** Greg Lamarre, for the  
22 record.

23 Staff has no further comments, Mr. Chair.

24 **MR. KUPFERSCHMIDT:** Bill Kupferschmidt for  
25 the record. No further comments, sir.

1                   **THE CHAIRPERSON:**    This completes the  
2                   record for the hearing on the matter of the Environmental  
3                   Assessment Screening Report regarding a proposal to  
4                   construct and operate a Shielded Modular Above-Ground  
5                   Storage at Chalk River Laboratories.

6                                The Commission will deliberate and will  
7                   publish its decision in due course.

8                                It will be posted on the CNSC website and  
9                   will be distributed to the participants.  So thank you for  
10                  your participation.

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12                  --- Upon adjourning at 10:20 a.m.

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