

# Record of Proceedings, Including Reasons for Decision

In the Matter of

Applicant Atomic Energy of Canada Limited

Subject Application to Approve the Operation of  
Shielded Modular Above-Ground Storage  
Building No. 1 at the Chalk River Laboratories

Hearing  
Date January 10, 2008

**RECORD OF PROCEEDINGS**

Applicant: Atomic Energy of Canada Limited

Address/Location: Chalk River Laboratories, Chalk River, Ontario, K0J 1J0

Purpose: Application to approve the operation of shielded modular above-ground storage buildings at the Chalk River Laboratories

Application received: August 15, 2007

Date of hearing: January 10, 2008

Location: Holiday Inn Oshawa, 1011 Bloor St. East, Oshawa, Ontario

Members present: L.J. Keen  
A.R. Graham  
M. J. McDill

Secretary: M.A. Leblanc  
Recording Secretary: S. Dimitrijevic  
General Counsel: L. Thiele

<b>Applicant</b>	<b>Document Number</b>
There were no representatives	CMD 08-H100.1 CMD 08-H100.1A
<b>CNSC staff</b>	<b>Document Number</b>
There were no representatives	CMD 08-H100 CMD 08-H100.A
<b>Intervenors</b>	<b>Document Number</b>
There were no interventions	

**Licence:** Amended  
**Date of Release of Decision:** January 31, 2008

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## **Introduction**

1. Atomic Energy of Canada Limited (AECL) has applied to the Canadian Nuclear Safety Commission<sup>1</sup> (the Commission) for an amendment to its operating licence NRTEOL-01.00/2011 and an approval to operate the Shielded Modular Above-Ground Storage (SMAGS) Building No. 1.
2. Following a hearing held on May 1, 2007, the Commission approved the construction of six SMAGS buildings within the Waste Management Area (WMA) “H” located at the Chalk River Laboratories (CRL) near Chalk River, Ontario. The WMA “H” is operated under the current operating licence, whose licence conditions 4.1 and 4.2 preclude AECL from operating SMAGS buildings without prior authorization from the Commission.
3. The operation of the SMAGS building would consist of the reception and storage of compacted and uncompacted low-level radioactive waste.

## Issues

4. In considering the application, the Commission was required to decide, pursuant to subsection 24(4) of the *Nuclear Safety and Control Act*<sup>2</sup> (NSCA):
  - a) if AECL is qualified to carry on the activity that the amended licence would authorize; and
  - b) if, in carrying on that activity, AECL would 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.

## Hearing

5. The Notice of Hearing was given on November 7, 2007. The public was invited to intervene in writing by submitting an intervention by December 12, 2007.
6. Pursuant to subsection 22(1) of the NSCA, the President of the Commission established a Panel of the Commission consisting of three members to hear this matter.
7. The standing panel on procedural matters decided to move the hearing date to January 10, 2008 from the original date of January 9, 2008.

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<sup>1</sup> The *Canadian Nuclear Safety Commission* is referred to as the “CNSC” when referring to the organization and its staff in general, and as the “Commission” when referring to the tribunal component.

<sup>2</sup> S.C. 1997, c. 9.

8. The Panel of the Commission (hereafter referred to as the Commission), in making its decision, considered information presented in writing for a hearing held on January 10, 2008 in Oshawa, Ontario. The hearing was conducted in accordance with the *Canadian Nuclear Safety Commission Rules of Procedure*<sup>3</sup>. During the hearing, the Commission received written submissions from CNSC staff (CMD 08-H100 and CMD 08-H100.A) and AECL (CMD 08-H100.1 and CMD 08-H100.1A). There were no interventions.

### **Decision**

9. Based on its consideration of the matter, the Commission concludes that AECL is qualified to carry on the activity that the amended licence will authorize. The Commission is also satisfied that AECL, in carrying on that activity, will 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. Therefore,

the Commission, pursuant to section 24 of the *Nuclear Safety and Control Act*, approves the operation of SMAGS Building No. 1 and amends the CRL operating licence. The amended licence NRTEOL-01.01/2011 remains valid until October 31, 2011, unless suspended, amended, revoked or replaced.

10. With this decision, the Commission adds a licence condition and revises Appendix B of the licence, as recommended by CNSC staff in CMD 08-H100 and CMD 08-H100.A.

### **Issues and Commission Findings**

11. In making its decision, the Commission considered a number of issues relating to AECL's qualification to operate SMAGS Building No. 1 and the adequacy of the proposed measures for protecting the environment, the health and safety of persons, national security and international obligations to which Canada has agreed.
12. The findings of the Commission presented below are based on the Commission's consideration of all of the information and submissions available on the record for the hearing.

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<sup>3</sup> S.O.R./2000-211.

### **Radiation Protection**

13. During the hearing held on May 1, 2007, AECL informed the Commission on radiation protection measures presented in its comprehensive safety analysis of the construction and operation of SMAGS buildings. AECL also informed the Commission on the radiation protection policies set out in the AECL Radiation Protection Program, which documents principles and procedures to be followed on the CRL site.
14. In CMD 08-H100.1, AECL stated that SMAGS buildings would be operated in a manner that will ensure that radiation exposure to workers is minimized in accordance with the ALARA principle (As Low As Reasonably Achievable). Maximum radiation dose for workers operating the SMAGS Building No. 1 is estimated to be 2.8 milliSievert per year (mSv/a), which is well below regulatory limits.
15. AECL further stated that radiological releases from the SMAGS buildings would be minimized in accordance with the ALARA principle and that no adverse effects on public health were expected.
16. In its submission, CNSC staff stated that AECL's Radiation Protection Program and its implementation meet requirements.
17. The Commission considers the measures to be taken to limit radiation doses during the operation of the SMAGS Building No. 1 to be adequate.

### **Environmental Protection**

18. AECL stated in its submission that it maintains an ISO-14001 compliant Environmental Management System and that the operation of SMAGS storage buildings would be managed in full compliance with AECL's policy for protection of the environment.
19. In CMD 08-H100, CNSC staff noted that AECL has a documented environmental protection program that meets CNSC requirements.
20. CNSC staff found the monitoring program for SMAGS buildings referenced in AECL's Safety and Hazardous Analysis Report to be acceptable.
21. CNSC staff also noted that the samples of water accumulated in the sumps would be collected and analysed and airborne emissions would be monitored. AECL will submit the results to CNSC staff in its annual compliance report.
22. Based on this information, the Commission is of the opinion that AECL will continue to make adequate provision for the protection of the environment during the operation of the SMAGS Building No. 1.

### **Adequacy of Building Design**

23. AECL indicated in its submission that construction of SMAGS Building No. 1 has been performed in accordance with the Canadian Standards Association (CSA) N286.3 *Construction Quality Assurance for Nuclear Power Plants* standard.
24. CNSC staff confirmed that construction of SMAGS Building No. 1 had followed the approved design.
25. The Commission sought further information regarding the testing and adequacy of the impermeable polymer membrane built in the foundation of the SMAGS Building No. 1. In its response, CNSC staff stated that AECL had tested the membrane in accordance with the American Society for Testing and Materials (ASTM) D5957-98 *Standard Guide for Flood Testing Horizontal Waterproofing Installations*. CNSC staff has verified the test documentation that was supplied by AECL and witnessed the installation and the concrete pour for the main slab. CNSC staff indicated that it was satisfied with the testing and the installation of the impermeable polymer membrane.
26. The Commission considered the potential effects of seismic activities on the stacking and structural integrity of the waste containers. In its written response, CNSC staff stated that the results of AECL's safety analysis have shown that the potential consequences were well within the safety case.

### **Operation and Performance Assurance**

27. In CMD 08-H100.1, AECL indicated that the CRL WMA were operated in accordance with the Operational Quality Assurance Program (Waste Management Operations Conduct of Operations) that meets the requirements of the CSA N286.5 *Operations Quality Assurance for Nuclear Power Plants* standard. The program comprises facility-specific procedures that in turn describe the organization, responsibilities, processes and controls. This program is subject to quarterly and annual management review.
28. AECL further explained that operations and maintenance of the SMAGS buildings would be similar to those already conducted for the existing Modular Above-Ground Storage (MAGS) buildings. AECL also provided a SMAGS Project and Operations Organization Chart.
29. AECL informed the Commission that a training program had been implemented to ensure that personnel have the requisite skills and knowledge to safely operate the waste storage systems, including the SMAGS Building No.1. Specific training packages have been prepared to assist in the training of personnel to carry out routine operations and maintenance.

30. AECL further stated that commissioning and training plans for operation and maintenance had been prepared in accordance with the requirements of the CSA N286.4 *Commissioning Quality Assurance for Nuclear Power Plants* standard.
31. CNSC informed the Commission that the operation of SMAGS buildings would be reviewed annually by independent reviewers. The results of these reviews would be submitted to CNSC staff in AECL's annual reports.
32. CNSC staff also stated that it finds maintenance program for SMAGS, referenced in AECL's Safety and Hazards Analysis Report, to be satisfactory.

### **Emergency Preparedness and Fire Protection**

33. AECL indicated that SMAGS buildings would be fully integrated in the AECL's Emergency Preparedness Program. The program comprises radiation, chemical and fire hazards, and medical emergencies and has been revised to address possible emergencies specific to SMAGS Building No. 1.
34. AECL also indicated that possible fire scenarios have been evaluated in a third-party assessment of fire hazards for SMAGS buildings. AECL added that the operating program includes procedures and training to ensure the absence of combustible materials and the continued availability of the fire detection and protection systems.
35. CNSC staff stated in the submitted CMD 08-H100 that the licensee meets expectations with respect to the fire protection program and its implementation.
36. Based on the information received, the Commission is satisfied that AECL will make adequate provision for emergency preparedness and fire protection while operating the SMAGS Building No. 1.

### **Nuclear Security and Safeguards**

37. AECL noted that SMAGS Building No.1 will store natural and depleted uranium and thorium waste that is subject to International Atomic Energy Agency (IAEA) safeguards. AECL further noted that the IAEA agrees with the safeguards measures to be applied and has inspected the SMAGS Building No. 1 construction.
38. AECL stated that the CRL site and SMAGS Building No.1 incorporate physical security measures to deter and respond to unauthorized intrusion.
39. The Commission concludes that AECL has adequate provisions for ensuring the security of the facility.



### **Decommissioning Plan and Financial Guarantee**

40. AECL has submitted to CNSC a revised Preliminary Decommissioning Plan. The plan has been revised to include required references to the existing information cited in the Comprehensive Preliminary Decommissioning Plan and the financial guarantee instrument. CNSC staff stated that the revised plan was satisfactory.
41. The Commission is satisfied that the preliminary decommissioning plan is in place and covers the operation of the SMAGS Buildings.

### **Public Information**

42. CNSC staff indicated that AECL and CNSC staff have consulted extensively with the public and other government departments during the development of the proposal for the SMAGS facility and in the preparation of the environmental assessment.
43. CNSC staff further indicated that AECL continues to communicate with the local community and conducts regular public meetings with various interest groups.

### **Application of the *Canadian Environmental Assessment Act***

44. Pursuant to section 18(1) of the *Canadian Environmental Assessment Act* (CEAA), CNSC was required to ensure an environmental assessment (EA) screening of the proposed project was carried out.
45. The EA screening was performed and the resulting Screening Report was considered by a Panel of the Commission at a hearing held on April 27, 2006. The Commission accepted the conclusions from the EA that the project, taking into account the mitigation measures identified in the Screening Report, was not likely to cause significant adverse environmental effects.
46. CNSC staff noted that there was no further requirement for an EA pursuant to subsection 5(1) of the CEAA.
47. The Commission is of the opinion that the requirements for an environmental assessment of the construction and operation of SMAGS buildings have been fulfilled.

### **Conclusion**

48. The Commission has considered the information and submissions of AECL and CNSC staff as presented in the material available for reference on the record.
49. The Commission concludes that the requirements of the CEAA have been fulfilled.

50. The Commission is satisfied that the licensee meets the requirements of section 24 of the NSCA. The Commission is of the opinion that AECL is qualified to carry on the activity that the amended licence will authorize and that it will 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.
51. The Commission therefore, pursuant to section 24 of the NSCA, approves the operation of SMAGS Building No. 1 and amends the CRL operating licence.
52. The Commission includes in the licence condition 3.7 and updates the Appendix B of the licence, as recommended by CNSC staff.

Linda J. Keen  
Presiding Member  
Canadian Nuclear Safety Commission