



Canadian Nuclear  
Safety Commission

Commission canadienne  
de sûreté nucléaire

# Record of Proceedings, Including Reasons for Decision

In the Matter of

Proponent Atomic Energy of Canada Limited

Subject Environmental Assessment Screening Report  
Regarding Atomic Energy of Canada Limited's  
Proposed National Research Universal Reactor  
Long-Term Management Project at Chalk River  
Laboratories in Chalk River, Ontario

Hearing Date March 18, 2011

## **RECORD OF PROCEEDINGS**

Proponent: Atomic Energy of Canada Limited

Address/Location: 2251 Speakman Drive, Mississauga, Ontario, L5K 1B2

Purpose: Environmental Assessment Screening Report Regarding Atomic Energy of Canada Limited's Proposed National Research Universal Reactor Long-Term Management Project at Chalk River Laboratories in Chalk River, Ontario

Application received: March 27 and June 29, 2009

Date of hearing: March 18, 2011

Location: Canadian Nuclear Safety Commission (CNSC) Headquarters, 280 Slater St., Ottawa, Ontario

Members present: M. Binder, Chair

Secretary: M.A. Leblanc  
Recording Secretary: D. Major

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## Introduction

1. Atomic Energy of Canada Limited (AECL) has notified the Canadian Nuclear Safety Commission (CNSC) of its intention to undertake a variety of activities to support the continued operation of the National Research Universal (NRU) reactor, located at the Chalk River Laboratories in Chalk River, Ontario.
2. AECL submitted a project description in March 2009 which was followed by the submission of the Environmental Impact Statement (EIS) in March 2010. Environment Canada reviewed the EIS and submitted comments to the CNSC. CNSC staff worked with AECL to address the issues raised during the review of the draft EIS and the final EIS submitted by AECL in September 2010 was deemed to be satisfactory to CNSC staff.
3. AECL is proposing this project to continue its activities in support of nuclear power development, medical isotope production, fundamental materials research, and other commercial applications at the Chalk River Laboratories. Activities within the project will include the following components:
  - site preparation, excavation and grading;
  - remediation and modification of the NRU Rod Bay structure;
  - construction and operation of a new Light Water Detritiation Facility (LWDF);
  - construction and operation of a new Fissile Waste Storage System (FWSS);
  - construction and operation of an Enclosed Utilidor or equivalent, as part of the NRU Rod Bay encapsulation system;
  - upgrading of the ventilation system of the existing Molybdenum Production Facility (MPF);
  - upgrading of the connection of the MPF to the existing Active Drain System;
  - continued operation of the MPF;
  - operation of the NRU Reactor and related facilities; and
  - ongoing waste management.
4. The authorization of the proposed activities will require amendments to AECL's Nuclear Research and Test Establishment Operating Licence and renewal of this licence to support the continued operation of the NRU Reactor, pursuant to subsection 24(2) of the *Nuclear Safety and Control Act*<sup>1</sup> (NSCA)
5. Before the Commission is able to make a licensing decision with respect to the proposed project, the Commission must, in accordance with the requirements of the *Canadian Environmental Assessment Act*<sup>2</sup> (CEAA), make a decision on an Environmental Assessment (EA) screening of the proposed project. The Commission is

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<sup>1</sup> Statutes of Canada (S.C.), 1997, chapter (c.) 9.

<sup>2</sup> S.C., 1992, c. 37.

the sole responsible authority<sup>3</sup> (RA) for the EA. Health Canada, Fisheries and Oceans Canada, Natural Resources Canada, and Environment Canada identified themselves as federal authorities (FAs) for the purpose of providing expert assistance to CNSC staff during the EA.

6. As required under sections 15 and 16 of the CEAA, the proposed Environmental Assessment Scoping Information Document (EASID) (formally called EA Guidelines) was prepared by CNSC staff. In July 2009, the Commission approved the EA Guidelines for this project<sup>4</sup>. The proposed EA Screening Report was developed based on the review of the Environmental Impact Statement and on technical studies submitted by AECL. The EA Screening Report is attached as an appendix to CMD 11-H107.
7. This *Record of Proceedings* describes the Commission's considerations of the Screening Report and its reasons for decisions on the results. The Screening Report of AECL's proposed National Research Universal Reactor Long-Term Management Project at Chalk River Laboratories is attached as an appendix to CMD 11-H107.

#### Issues

8. In considering the Screening Report, the Commission was required to decide:
  - a) whether the Screening Report is complete; that is, whether all of the factors and instructions set out in the approved EASID and subsection 16(1) of the CEAA were adequately addressed;
  - b) whether the project, taking into account the mitigation measures identified in the Screening Report, is likely to cause significant adverse environmental effects;
  - c) whether the project must be referred to the federal Minister of the Environment for referral to a review panel or mediator, pursuant to paragraph 20(1)(c) of the CEAA; and
  - d) whether the Commission can proceed with its consideration of an application for a licence under the NSCA, consistent with paragraph 20(1)(a) of the CEAA.

#### Hearing

9. Pursuant to section 22 of the NSCA, the President of the Commission established a

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<sup>3</sup> Responsible Authority in relation to an EA is determined in accordance with subsection 11(1) of the CEAA.

<sup>4</sup> Record of Proceedings on the *Proposed Environmental Assessment Scoping Information Document for the National Research Universal (NRU) Reactor Long-Term Management Project at Chalk River*, hearing date July 8, 2009

Panel of the Commission to review the application. In its decision of July 8, 2009 regarding the EASID for the project, the panel had determined that approval of the EA Screening Report would be considered by the Commission in a closed session (i.e., an abridged hearing) unless circumstances or findings warrant the conduct of a public hearing. Based on the findings and the very low level of public interest in this matter, a public hearing is not warranted. The Commission, in making its decision, considered information presented for a hearing held on March 18, 2011 in Ottawa, Ontario. During the hearing, the Commission considered written submissions from CNSC staff (CMD 11-H107) and AECL (CMD 11-H107.1).

### **Decision**

10. Based on its consideration of the matter, as described in more detail in this *Record of Proceedings, Including Reasons for Decision*, the Commission decides that:

- a) the Environmental Assessment Screening Report appended to CMD 11-H107 is complete; the scope of the project and the scope of assessment were appropriately determined in accordance with sections 15 and 16 of the *Canadian Environmental Assessment Act*, and all of the required assessment factors were addressed during the assessment;
- b) the project, taking into account the mitigation measures identified in the Environmental Assessment Screening Report, is not likely to cause significant adverse environmental effects;
- c) it will not refer the project to the federal Minister of the Environment for his referral to a review panel or mediator; and
- d) it will proceed to consider the licence application amendment under the provisions of the *Nuclear Safety and Control Act*, consistent with paragraph 20(1)(a) of the *Canadian Environmental Assessment Act*.

### **Issues and Commission Findings**

11. The findings of the Commission presented below are based on the Commission's consideration of all the information and submissions available for reference on the record for the hearing.

#### **Completeness of the Screening Report**

12. In its consideration of the completeness of the EA Screening Report, the Commission considered whether the assessment had adequately addressed and appropriately defined the scope of the project and the assessment factors.

13. CNSC staff reported that the EA Screening Report included the assessment of the direct and indirect effects of the project on the environment, as well as describing the project works and activities to identify those project-environment interactions that would result in a measureable change to the existing environment. CNSC staff added that the assessment considered activities related to the normal operations and the effects of probable malfunctions and accidents. It also considered effects of the environment on the proposed project and cumulative environmental effects.
14. Based on the Commission's review of the EA Screening Report, the Commission concludes that all the required factors as detailed in the EASID were properly addressed during the assessment.
15. The Commission therefore concludes that the EA Screening Report is complete and compliant with the requirements of the CEEA.

### **Likelihood and Significance of Environmental Effects**

16. This section contains the Commission's findings with respect to whether the project is likely to cause significant adverse environmental effects, taking into account the identified mitigation measures.
17. CNSC staff stated that they are satisfied that AECL's final EIS adequately considers all potential environmental effects from all project activities. The activities associated with this project that have a potential interaction with the environment are described in paragraph three above.

### *Adequacy of the Assessment Methods*

18. The EA Screening Report contains information regarding the potential interactions between project activities and the existing environment related to normal operations, and the effects of probable malfunctions and accidents. In its submission, CNSC staff noted that the methodology used in the assessment of the direct and indirect effects of the proposed project on the environment was carried out in a step-wise manner as follows:
  1. identification of potential interactions between the proposed project and the environment;
  2. identification of each project-environment interaction likely to result in measureable adverse changes in the environment;
  3. identification of measures to mitigate environmental effects of the project;
  4. determination of adverse effects that could remain following the application of mitigation measures (residual effects); and
  5. determination of the significance of the residual effects.

This screening methodology was based on regulatory standards and guidelines, existing conditions, scientific literature, and the experience of technical specialists.

19. Based on its review of the EA Screening Report and the above information, the Commission concludes that the EA methods are acceptable and appropriate.

*Effects of the Project on the Environment*

20. CNSC staff stated that 151 potential project-environment interactions were identified; 27 during the site preparation phase; 67 during the construction and modification phase; and 57 during the operation and maintenance phase of the project. Most interactions are not expected to result in measureable effects, thus no further assessment was required. Interactions expected to result in measureable effects were further analyzed and mitigation measures were proposed to minimize hazards.
21. CNSC staff noted that no residual adverse effects to the environment are predicted following the implementation of appropriate mitigation measures.
22. Based on its review of the EA Screening Report and the above-noted information and considerations, the Commission concludes that the proposed project, taking into account the identified mitigation measures, is not likely to cause significant adverse environmental effects.

*Effects of the Environment on the Project*

23. CNSC staff reported that hazards having the potential to damage the project and result in adverse effects on the environment have been considered. CNSC staff provided information regarding natural events and discussed measures in place to reduce potential effects of the environment on the project. CNSC staff explained that the probabilities of extreme natural events and radiological consequences of such events were assessed as low to very low.
24. CNSC staff also reported that the NRU reactor is undergoing an Integrated Safety Review (ISR) based on guidance from the *International Atomic Energy Agency Safety Guide S-G-2.10* and the *CNSC Regulatory Document RD-360*<sup>5</sup>. CNSC staff explained that they will approve the Integrated Implementation Plan (IIP) and will oversee the implementation of corrective actions identified in the IIP as part of the overall ISR effort.
25. Based on the above information, the Commission concludes that the environment is not likely to cause significant adverse effects on the project.

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<sup>5</sup> CNSC Regulatory Document RD-360, *Life Extension of Nuclear Power Plants*, February 2008.

*Effects of Accident and Malfunction Events*

26. CNSC staff informed the Commission about the identification of accidents and malfunctions and the criteria used to judge the events. CNSC staff indicated that the postulated credible radiological and conventional malfunction and accidents are not likely to cause significant adverse environmental effects, taking into consideration the prevention measures and the contingency plans to prevent, eliminate or minimize the occurrence or effects arising from these accidents and malfunctions.
27. Based on its review of the Screening Report and the above-noted information, the Commission concludes that accident and malfunction events are not likely to cause significant adverse effects on the environment.

*Cumulative Effects*

28. CNSC staff presented an assessment of cumulative environmental affects. CNSC staff explained that the effects of a proposed project must be considered together with the effects of other projects and activities that are being carried out, or will be carried out, and are expected to overlap with those of the proposed project. CNSC staff stated that, for the proposed project, there are no anticipated cumulative effects on the environment as the project is not expected to produce any residual effects.
29. Based on the information received, the Commission concludes that, taking into account the identified mitigation measures, significant adverse cumulative effects are not expected to occur as a result of the project.

*Follow-Up Program*

30. A follow-up program under CEAA verifies the effectiveness of mitigation measures and the accuracy of environmental predictions.
31. CNSC staff reported that, if the EA Screening Report is approved by the Commission, AECL will undertake and report to CNSC staff, through CRL's Annual Status Report on EA Follow-up Actions, on the following:
  - the effectiveness of the encapsulation of the NRU Reactor Rod Bays activities;
  - emissions monitoring of the LWDF and the FWSS for a period of two full years;
  - confirmation from AECL following two full years of operation of the FWSS that adequate mitigation measures are put in place such that off-site consequences of criticality accidents to the public do not exceed criteria

established by IAEA and Health Canada as a trigger for public evacuation;

- results of the organically bound tritium measurements, to be finalized in March 2011, on select indicator species immediately downstream of the CRL liquid effluents;
  - comparison and analysis of discrepancies between the results of the 2005 follow-up commitment, “Characterization of background concentrations of metals at the CRL site and regional area”, and the 2005 Ecological Effects Review;
  - a recent summary of background water and sediment quality in the Ottawa River; and
  - summary of the next stage of the Ecological Effects Review as it relates to this EA.
32. CNSC staff further stated that the CNSC licence and compliance process would be used as the mechanism for ensuring the final design and implementation of follow-up activities and for the reporting of results.
33. Based on the above information, the Commission is satisfied that an appropriate follow-up program has been established for the proposed project.

*Conclusions on the Likelihood and Significance of Adverse Environmental Effects*

34. Based on the considerations and reasons noted above, the Commission concludes that the proposed project is not likely to cause significant adverse environmental effects, taking into account the identified mitigation measures.
35. The Commission is satisfied that the likelihood and significance of the effects have been identified with reasonable certainty.

**Nature and Level of Public Concern**

36. With respect to public concern as a factor in its consideration of whether to refer the project to the federal Minister of the Environment for a review panel or mediator, the Commission examined whether the public had sufficient opportunity to become informed about the project and the Environmental Assessment, and express their views on it. The Commission examined the nature and level of concern expressed by the public.
37. CNSC staff reported that, based on the Public Participation criteria approved by the Commission in August 2008, it was determined that this project did not require an

extensive level of public participation.

38. CNSC staff stated that EA documents, including the draft Screening Report, were made accessible to the public via notices on the Canadian Environmental Assessment Registry and on the CNSC Web site. CNSC staff stated that members of the public made 19 requests for copies of the EA Screening Report, but that no comments were received.
39. CNSC staff provided information regarding the Aboriginal Consultation activities undertaken with respect to the project. CNSC staff indicated that project-specific information was provided to the Algonquins of Pikwàkanagàn, Ottawa Regional Métis Council, Sudbury Regional Métis Council, Métis Nation of Ontario (MNO), and Algonquin Consultation office and that each group was provided with opportunities to comment on the information provided at various stages of the environmental assessment process. CNSC staff explained that the CNSC and AECL met with MNO, at MNO's request, to discuss the CNSC EA process, the NRU Reactor Long-term Management Project, other proposed projects on the CRL site, and NRCan's Nuclear Legacy Reliability Plan.
40. CNSC staff stated that the above mentioned groups were also provided notification of the public review period and a copy of the Draft EA Screening Report. Two comments were received from the MNO, which related to interest in heritage resources and to be made aware of accidents that occur at the project site. CNSC staff indicated that the comments were noted and will be kept on file, but do not require changes to the EA Screening Report.
41. Based on the information provided, the Commission is of the view that there was sufficient opportunity for the public to be informed and express its views on the project. The Commission therefore decides not to refer the project to the Minister of the Environment for referral to a review panel or mediator under paragraph 20(1)(c) of the CEAA.

## **Conclusion**

42. The Commission concludes that the EA Screening Report attached to CMD 11-H107 is complete and meets all of the applicable requirements of the *Canadian Environmental Assessment Act*.
43. The Commission concludes that the project, taking into account the appropriate mitigation measures identified in the Screening Report, is not likely to cause significant adverse environmental effects.
44. Furthermore, the Commission also concludes that, at this time, it will not request the federal Minister of the Environment to refer the project to a review panel or mediator in accordance with the provisions of the CEAA.

45. Therefore, the Commission, pursuant to paragraph 20(1)(a) of the CEEA, can proceed with the consideration of a licence application under the *Nuclear Safety and Control Act* which, if approved, would allow the project to proceed.



2011-03-18

Michael Binder  
President,  
Canadian Nuclear Safety Commission

Date