

Record of Proceedings, Including Reasons for Decision

In the Matter of

Applicant Ontario Power Generation Inc.

Subject Environmental Assessment Track Report
Regarding Ontario Power Generation Inc.'s
Proposal to Construct and Operate a Deep
Geologic Repository Within the Bruce Nuclear
Site in Kincardine, Ontario

Hearing
Date October 23, 2006

RECORD OF PROCEEDINGS

Applicant: Ontario Power Generation Inc.

Address/Location: 700 University Avenue, Toronto, Ontario, M5G 1X6

Purpose: Environmental Assessment Track Report regarding Ontario Power Generation Inc.'s proposal to construct and operate a Deep Geologic Repository within the Bruce Nuclear Site in Kincardine, Ontario

Application received: August 2006

Date of hearing: October 23, 2006

Location: Davidson Centre, Kincardine Hall, 601 Durham Street, Kincardine, Ontario

Members present: L.J. Keen, Chair
A. Harvey
C.R. Barnes

Secretary: M.A. Leblanc
Recording Secretary: M. Young
General Counsel: J. Lavoie

Applicant Represented By			Document Number
<ul style="list-style-type: none"> • K. Nash, Vice President, Nuclear Waste Management Division • F. King, OPG Director, Repository Development and Safety • M. Jensen, OPG Manager of Geoscience • T. Squire, OPG Director of Public Affairs • Dr. D. Moffatt, Principal with Golder Associates • K. Raven, President of INTERA • Dr. D. Martin, University of Alberta 			CMD 06-H22.1 CMD 06-H22.1A CMD 06-H22.1B
CNSC staff			Document Number
<ul style="list-style-type: none"> • B. Howden • P. Thompson • M. Rinker 	<ul style="list-style-type: none"> • M. Ben Balfadhel • B. Lojk • C. Taylor 	<ul style="list-style-type: none"> • S. Mihok • D. Howard • S. Nguyen 	CMD 06-H22 CMD 06-H22.A
Intervenors			
See appendix A			
Others			
E. Advokaat, Canadian Environmental Assessment Agency			

Date of Decision: October 23, 2006

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Introduction

1. Ontario Power Generation Inc. (OPG) notified the Canadian Nuclear Safety Commission (CNSC¹) of its intent to seek the Commission's approval to prepare a site, construct and operate a Deep Geologic Repository (DGR) on the Bruce Nuclear Site within the Municipality of Kincardine, Ontario. The DGR would be located approximately 1.5 km from the Lake Huron shoreline and would be constructed in the sedimentary rock approximately 500 to 700 m below the ground surface. The purpose of the DGR would be for the long-term storage of low and intermediate level radioactive waste.
2. CNSC authorization of OPG's request would ultimately require the issuance of a licence. Before considering OPG's application for a licence under the *Nuclear Safety and Control Act*² (NSCA), the CNSC must determine the results of an environmental assessment (EA). This determination includes making a decision on the potential for the project to cause adverse environmental effects, and determining a subsequent course of action under the *Canadian Environmental Assessment Act*³ (CEAA). As OPG's project falls within the *Comprehensive Study List Regulations*⁴ of the CEAA, the CNSC is required to submit an Environmental Assessment Track Report to the federal Minister of Environment which includes a Recommendation to the Minister of the Environment on the proposed track for the EA. These possible tracks are to either continue the EA as a comprehensive study or refer the EA to a review panel or mediator. The Commission is the sole responsible authority⁵ for this EA.
3. In carrying out this responsibility under the CEAA, the Commission must also determine the scope of the project and the scope of the assessment. To assist the Commission in this regard, CNSC staff prepared a draft Environmental Assessment Scoping Document (EA Guidelines) in consultation with other government departments, the public and other stakeholders. The draft *Scoping Document (EA Guidelines) Regarding Ontario Power Generation Inc.'s Proposal to Construct and Operate a Deep Geological Repository Within the Bruce Nuclear Site in Kincardine, Ontario* contains statements of scope for the approval of the Commission. The draft Scoping Document is appended to the EA Track Report included in CNSC staff's document CMD 06-H22.

¹ In this *Record of Proceedings*, 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.

² S.C. 1997, c. 9.

³ S.C. 1992, c. 37.

⁴ SOR/94-638.

⁵ Responsible Authority in relation to an EA is determined in accordance with subsection 11(1) of the CEAA.

Issues

4. In considering the Scoping Document, the Commission was required to decide, pursuant to subsections 15(1) and 16(3) of the CEAA respectively:
 - a) the scope of the project for which the EA is to be conducted; and
 - b) the scope of the factors to be taken into consideration in the conduct of the EA.
5. Pursuant to paragraph 21(2)(a) of the CEAA, the Commission was also required to report to the Minister of the Environment regarding
 - (i) the scope of the project, the factors to be considered in its assessment and the scope of those factors;
 - (ii) public concerns in relation to the project;
 - (iii) the potential of the project to cause adverse environmental effects; and
 - (iv) the ability of the comprehensive study to address issues relating to the project.
6. Pursuant to paragraph 21(2)(b) of the CEAA, the Commission was also required to recommend to the Minister of the Environment that CNSC continue with the EA by means of a comprehensive study, or to refer the project to a mediator or review panel.

Public Hearing

7. Pursuant to section 22 of the NSCA, the President of the Commission established a Panel of the Commission to hear this matter.
8. The Panel of the Commission (hereafter referred to as the Commission), in making its decision, considered information presented for a hearing held on October 23, 2006 in Kincardine, Ontario. The hearing was conducted in accordance with the Commission's process for determining matters under the CEAA and Rule 3 of the *Canadian Nuclear Safety Commission Rules of Procedure*⁶. In establishing the process, the Commission determined that it was appropriate to hold a public hearing on the matter. During the public hearing, the Commission received written submissions and heard oral presentations from CNSC staff (CMD 06-H22 and CMD 06-H22.A) and OPG (CMD 06-H22.1, CMD 06-H22.1A and CMD 06-H22.1B). The Commission also considered oral and written submissions from 57 intervenors (see Appendix A for a detailed list of interventions).

⁶ SOR/2000-211.

Decision

9. Based on its consideration of the matter, as described in more detail in the following sections of this *Record of Proceedings*,

the Canadian Nuclear Safety Commission

- a) approves the Environmental Assessment Scoping Document set out in the EA Track Report and as modified by the Commission below; that is, the scope of the project and the scope of the assessment were appropriately determined in accordance with sections 15 and 16 of the CEAA;
 - b) will submit to the Minister of the Environment the EA Track Report set out in CMD 06-H22, as modified by the Commission below, pursuant to paragraph 21(2)(a) of the CEAA; and
 - c) will recommend to the Minister of the Environment to refer the project to a Review Panel, pursuant to paragraph 21(2)(b) of the CEAA.
10. The Commission modifies the above-referenced Scoping Document to include the requirement to establish a baseline, using existing monitoring data and site characterization information, for monitoring environmental effects throughout the project.
11. The Commission makes the following changes to the above-referenced EA Track Report, in addition to the changes to the Scoping Document:

Section 7.0 *Ability of the Comprehensive Study to Address Issues Relating to the Project* is modified as per the discussion found in the same-named section of this *Record of Proceedings*.

Section 8.0 *Summary and Recommendation* is modified so that the Commission recommends to the Minister of Environment to refer the project to a review panel.

APPENDIX 1, Proposed Review Schedule is removed.

Issues and Commission Findings

Application of the CEAA

12. The CEAA requires that an EA be completed if there is both a prescribed action by a federal authority (commonly referred to as a “trigger”) and a “project”. The proposal involves the site preparation, construction and operation of the DGR. This is an undertaking in relation to a physical work and as such is a “project” for the purposes of the CEAA.
13. The CNSC issues licences for activities involved in OPG’s proposal under the authority of Section 24(2) of the NSCA, which is prescribed in the *Law List Regulations*⁷. Therefore, there is a “trigger” for an EA. The project is also not of a type listed in the *Exclusion List Regulations*⁸ of the CEAA.
14. The Commission therefore concludes that an EA of the proposed project to prepare, construct and operate a DGR is required pursuant to the CEAA.

Type of Environmental Assessment

15. Although the proposed project would be located within the Bruce Nuclear site, the proposal would involve a new Class 1B facility on a site not within the boundaries of an existing licensed nuclear facility and would be used for the disposal of radioactive nuclear substances. As such, OPG’s project falls within the *Comprehensive Study List Regulations* of the CEAA. Therefore the CNSC must ensure that a comprehensive study of the project is initiated.
16. CNSC staff reported that the CNSC, as a responsible authority for a project, has certain obligations under the *Comprehensive Study List Regulations* of the CEAA. These responsibilities include developing scoping information (the EA Scoping Document), to consult the public on specific topics, and to make recommendations to the Minister of Environment on the adequacy of a comprehensive study to address the issues. Thus the CNSC is required to submit an Environmental Assessment Track Report to the federal Minister of Environment which includes a Recommendation to the Minister of the Environment on the proposed track for the EA.

Federal Coordination

17. The CNSC is the only responsible authority under the CEAA identified for this Comprehensive Study. Through application of the CEAA *Federal Coordination Regulations*⁹, Natural Resources Canada, Environment Canada and Health Canada

⁷ SOR/94-636.

⁸ SOR/94-639.

⁹ SOR/97-181.

have been identified as Federal Authorities for providing expert assistance to the CNSC during the EA.

18. CNSC staff reported that it had consulted with the Ontario Ministry of the Environment and confirmed that there are no provincial EA requirements under the Ontario *Environmental Assessment Act*¹⁰ that are applicable to the proposal.
19. The Commission therefore concludes that a joint EA with the Province of Ontario is not required in this case. However, the Commission expects that the Province of Ontario will provide expert advice as appropriate.

Scope of the Project

20. OPG described the proposed DGR that would receive existing low and intermediate level radioactive waste, as well as waste produced from the continued operation of OPG-owned nuclear generating stations (NGSs) at Bruce, Pickering, and Darlington in Ontario. OPG noted that much of the existing waste is currently stored in interim facilities at the Western Waste Management Facility (WWMF) on the Bruce Site and the remainder will be produced over the remaining lives of the existing OPG-owned NGSs. OPG noted that the proposed project does not include provisions for decommissioning waste from the OPG-owned reactors.
21. OPG explained that the DGR project includes the site preparation, construction, operation and long-term performance of above-ground and below-ground facilities. The surface facilities would consist of components such as the underground access and ventilation buildings, associated temporary or permanent buildings and related infrastructure. The underground facilities would be comprised of components such as shafts, ramps and tunnels, emplacement rooms, and various service areas and installations. Surface and underground facilities are expected to be located within the boundaries of the Bruce site. Operations would involve those activities required to operate and maintain the DGR facility, remove waste from the WWMF, receive waste from the WWMF and NGSs, emplacement of waste into the repository, as well as closure activities and monitoring of the repository.
22. CNSC staff described the scope of the project in the Scoping Document included in the EA Track Report. As part of its presentation to the Commission, CNSC staff explained the purpose of the DGR and described the physical works associated with the surface and below ground facilities as well as the undertakings that would include site preparation, construction and operation.
23. To ensure that the project scope sufficiently covered all potential activities, the Commission enquired whether the DGR would receive future decommissioning waste or waste generated from possible new NGSs.

¹⁰ R.S.O. 1990, C. E.18.

24. OPG responded that only current waste temporarily stored at the WWMF and waste to be generated from the continued operation of the existing NGSs would be considered for the purpose of this project. The project description does not include decommissioning waste as there is no definitive plan for decommissioning at this time or for the management of decommissioning waste. OPG noted in its project description that an EA is expected to be required for the decommissioning activities for each of the generating stations and the management of the decommissioning waste could be addressed through that EA process at that time.
25. CNSC staff noted in its description of the project that the operational phase may include construction of additional emplacement rooms but, in concurrence with OPG's description of the source of the waste, this would not be for the purpose of accommodating waste resulting from decommissioning activities or the operation of possible new reactors.
26. The Commission sought further information on the possibility of retrieving the stored waste once the facility is sealed. OPG responded that, although difficult, it would still be possible to recover the material once the facility was closed.
27. Taking into consideration the information presented, the Commission concludes that the scope of the project has been adequately determined for the purpose of the Scoping Document.
28. However, the Commission is concerned with the estimate of the volume of waste to be received by the DGR, as the life extension plan for existing NGSs in Ontario has yet to be determined by the operators (i.e., OPG and Bruce Power) or approved by the CNSC. The Commission is also of the opinion that further clarification is required as to the future disposition of the decommissioning waste from OPG's NGSs.
29. Therefore, the Commission expects more information regarding the waste characteristics, including volume, as part of the project description discussed in paragraphs 42 and 43 below. In this regard, the Commission expects that the EA to be carried out will accurately determine the scope of the waste and consequently allow any modifications to the proposed project as appropriate. For example, the EA should consider the future construction of additional emplacement rooms to accommodate increased volumes of waste.
30. Furthermore, the Commission is not convinced that there exists a clear indication of what measures could be taken within the current conceptual design of the facility or the consequences that would result in the case of an emergency that required the retrieval of the waste. Thus the Commission expects that the concept of waste retrieval be included in the project description.

Scope of the Assessment

31. CNSC staff stated that the assessment factors would include all of the factors identified in subsections 16(1) and 16(2) of the CEEA. CNSC staff stated that the mandatory factors in subsection 16(1) of the CEEA are: the environmental effects of the project, including those that may be caused by malfunctions or accidents and any cumulative environmental effects with other projects; the significance of the effects identified above; comments from the public that are received in accordance with the CEEA and its regulations; and measures that are technically and economically feasible that would mitigate any significant adverse environmental effects of the project. CNSC staff stated that the mandatory factors in subsection 16(2) of the CEEA are: the purpose of the project; alternative means of carrying out the project; the need for and requirement of a follow-up program; and the capacity of renewable resources that are likely to be significantly affected by the project to meet the needs of the present and those of the future.
32. CNSC staff stated that the CNSC, with the discretion allowed for in paragraph 16(1)(e) of the CEEA, also requires that consideration of traditional and local knowledge be included in the factors as well as the need for and the benefits of the project.
33. The Commission is satisfied that the proposed factors are appropriate and meet the requirements of the CEEA, whether the CNSC continues with the Comprehensive Study or if the project is referred to a Review Panel or a mediator.
34. The Commission considered the scope of the factors to be assessed as proposed by CNSC staff in the Scoping Document. Specific issues raised by the Commission and intervenors at the hearing with respect to the scope of factors are described in the following paragraphs.

Project Description

35. CNSC staff noted that the main objective of the project description is to identify and characterize those specific components and activities that have the potential to interact with the surrounding environment under both normal operations and malfunctions and accidents.
36. The Commission sought further information with respect to the average dose rate emitted by the intermediate level waste. OPG responded that the average radiation level of intermediate level waste, as listed in its waste characterization program database, is 20 millisieverts per hour (mSv/h). OPG explained that this data was based on the dose as the waste is initially stored in the facility and did not account for radioactive decay that would ultimately decrease the dose.

37. In response to the Commission's concern with the possible heat that could be generated from the waste, OPG noted that the low level waste is not heat generating in any significant way. Although some of the intermediate level waste can generate heat, OPG does not expect heat to be a design-setting issue for the DGR.
38. With respect to the characterization of the waste, the Commission inquired whether an upper limit on the radioactivity level had been set for intermediate level radioactive waste. CNSC staff responded that there was no limit but rather that the design of the facility would have to ensure that it could adequately manage the waste that is intended for the DGR.
39. CNSC staff noted that a formal classification system for these types of waste did not currently exist although such a system was under development. CNSC staff further explained CNSC's approach to regulate waste management by the characteristics of the waste, i.e. its chemical, biological, and radiological properties, and the design of the facility that can adequately manage this waste. OPG noted that its waste characterization program database contains information on all of the waste that is destined for the DGR.
40. In the absence of a classification system in Canada and in consideration of OPG's research into existing repositories internationally, the Commission asked how Canada's definitions of low and intermediate level radioactive waste compare to international standards. OPG responded that low level wastes are very similar, internationally. OPG also stated that although its intermediate level waste differs from that generated by other sites outside of Canada with respect to the amount of specific radionuclides, this waste is ultimately considered similar in nature.
41. The Commission expressed its concerns with respect to the uncertainty associated with the characterization of the waste, as a result of the absence of a classification system for low and intermediate level waste. Although it is not within the scope of an EA to address this issue, the Commission is of the view that a clear classification system would bring added clarity to nuclear waste categorization in Canada.
42. The Commission also expressed its concern with respect to potential quantities and origins of the waste, as a result of the possible refurbishment and life extension of the existing NGSs in Ontario and as discussed in paragraph 28 above.
43. Therefore, the Commission expects that the project description to be included in the EA will adequately address its concern regarding the type of waste streams and the waste characteristics, including the information on the source, volume, and chemical and radiological hazard.
44. With respect to malfunctions and accidents, the Commission also expressed concerns about the potential for collapse of the cavities, groundwater ingress into the system as a whole, the high lateral stress fields, and the potential for contamination into Lake Huron. In this respect, the Commission expects that various scenarios be included

early in the conduct of the EA studies to ensure that all potential malfunctions and accidents that have a reasonable probability of occurring are described and considered for their relevant environmental effects. Furthermore, as discussed in paragraph 30, the Commission expects that the concept of waste retrieval be included in the project description.

Description of the Existing Environment

45. CNSC staff explained that a description of the existing environment is needed to determine the likely interactions between the project and the surrounding environment. CNSC staff provided a list of environmental components that are typically described in the various study areas and a description of the human components of these environmental components.
46. The Commission expressed the concern that insufficient information had been provided at this stage with respect to the geological formations of the area being considered for the DGR. Furthermore, the Commission expressed the view that there was a lack of information in regard to the geological characterization and hydrology factors underlying the project and that certain elements such as local stratigraphic variation, permeability, subsurface fracture pattern, and effects of high lateral stress fields may not have been accurately considered by the proponent.
47. Although the Commission is satisfied that the environmental and associated human components proposed by CNSC staff are adequate, the Commission is concerned that the description of the existing environment may not include sufficient information on the baseline conditions to allow the environmental impacts of the proposed activities to be assessed. Therefore, the Commission expects that further detailed information be provided early in the conduct of the EA to ensure an adequate characterization of the existing environment. Further discussion with respect to site characterization is found in the section entitled *Potential of the Project to Cause Adverse Environmental Effects*.

Spatial and Temporal Boundaries of Assessment

48. CNSC staff defined the geographic study areas that can reasonably be expected to be affected by the project.
49. Several intervenors, including Greenpeace, Friends of the Earth Canada, the Nuclear Information and Resource Service, and individuals and organizations from Michigan, United States, expressed the view that the regional study area may not be adequately described in the Scoping Document. Specifically, the intervenors were of the opinion that the study area was not sufficiently large to ensure that potential trans-boundary impacts of the project will be addressed during the conduct of the EA study. These intervenors were concerned with the possibility of negative effects on Lake Huron

and the neighbouring regions, including the United States.

50. In this respect, the Commission inquired about the extent of the study area. CNSC staff stated that the study area itself and the timeframes are flexible to ensure that the geographic extent of all effects and the timeframes in which those effects would occur is captured within the EA. For example, if downstream communities were impacted, they would be included as part of the assessment.
51. The Commission sought further information regarding potential trans-boundary effects of the project. CNSC staff responded that, based on preliminary safety assessments, the concentrations of radionuclides that may reach the lake deep in the sediments are very small compared to numbers that are of concern to humans and to the ecosystems. CNSC staff thus concluded that it would be difficult to detect that these effects would occur beyond a very localized scale.
52. Further to the trans-boundary effects and with respect to the assessment of timeframes, the Commission expressed concern over the potential for transport of contaminants to move from above the site into Lake Huron waters within human lifetimes. CNSC staff responded that one of the principles of CNSC Regulatory Policy P-290 *Managing Radioactive Waste*¹¹ on managing radioactive waste is that radioactive waste should be managed in a manner that protects human health and the environment of current and future generations. This is achieved by ensuring that the future impact associated with radioactive waste management is not greater than the one that is accepted by our generation. Regulatory Policy P-290 requires that, in terms of timeframes, the assessment be carried out until the maximum impact is predicted, and then the criteria that are used to assess or judge that maximum impact are not greater.
53. The Commission sought further information with respect to the assessment of the long-term safety of the DGR. CNSC staff confirmed that it was utilizing international experience to develop the safety assessment. Similarly, OPG described the international investigations that it has carried out with respect to repositories in other countries in support of the safety cases.
54. CNSC staff noted that the international community agrees that certain sedimentary rock formations are adequate for containing and isolating radioactive waste. CNSC staff further noted that a large body of information on the characteristics of sedimentary rock is available from existing programs focussed on sedimentary rock. In this respect, CNSC staff stated that safety assessments for facilities set in certain sedimentary rocks have predicted radiation doses that are well below the regulatory limits.
55. Further to the subject of safety assessments, several intervenors asked for an assessment time of one million years in order to encompass the lifetime of the waste. The Commission asked if this was appropriate. OPG responded that according to the

¹¹ CNSC Regulatory Policy Document P-290 *Managing Radioactive Waste*, July 2004.

draft Safety Assessment Requirements document, the safety assessment calculations would continue until the dose peaks. OPG stated that this would be on the order of several hundred thousand years.

56. Regarding the assessment of cumulative effects, the Commission enquired whether the activities associated with the potential future builds of NGSs and the decommissioning of the existing NGSs will be considered. CNSC staff stated that these effects would be assessed under the context of cumulative effects, as part of the EA study.
57. The Commission also asked about the impact of cumulative effects from this project with other projects at the Bruce site. OPG responded that it would identify projects which are predicted in the near future as part of the EA studies and focus on the direct effects of DGR. OPG stated that it would look at whether effects from other projects that might overlap in terms of space and time. CNSC staff concurred with OPG's statements.
58. With respect to a follow-up program, the Commission noted that there was very little in the Scoping Document about the baseline and long-term monitoring program, despite its critical nature. OPG stated that it would address the requirements concerning post-closure monitoring and operational monitoring that are documented in the Scoping Document in the submission of its EA and follow-up report.
59. The Commission queried the need to establish a baseline for monitoring effects throughout the project. CNSC staff responded that the baseline could be more explicitly identified in the Scoping Document. CNSC staff explained that the existing environmental monitoring data and site characterization information would be included in the assessment, as well as the need for the site characterization program information to be tightly linked to the EA.
60. The Commission is satisfied that the spatial and temporal boundaries of the assessment will remain flexible during the assessment to allow the full extent of a likely environmental effect to be considered. In this regard, should the results of modelling demonstrate that there is a possible dispersion of a contaminant that is likely to cause an environmental effect beyond the boundaries identified in the Scoping Document, it will be taken into account in the assessment.

Conclusion on the Scope of the Assessment

61. Taking into consideration the above information with the fact that the project is at the preliminary stage of an EA, the Commission is satisfied that the factors to consider in the assessment of project and the scope of those factors have been adequately described in the Scoping Document appended to the EA Track Report included in CMD 06-H22.

62. The Commission is of the view that the EA study will include more information in regard to the elements that are uncertain at this stage such as the retrieval of the nuclear substances, subsurface geology, structure and hydrogeology, potential trans-boundary effects, international comparison with similar projects, and mitigation measures. This will ensure an adequate assessment of the effects of the project on the environment and the significance of these effects, taking into consideration mitigation measures.

Public Consultation

63. CNSC staff reported that consultation is an important aspect of the EA, in both a comprehensive study and in a panel review. CNSC staff stated that a public registry file was established for the project and a Notice of Commencement was posted on the CNSC website and the Canadian Environmental Assessment Registry (CEAR).
64. CNSC staff explained that several consultation activities were conducted by CNSC staff, including an open house meeting that was advertised in local newspapers and radio, as well as direct mailing to over 60 individuals and organizations. The purpose of the open house was to explain the EA process, explain the Scoping Document and explain how members of the public could participate and comment. The open house was held with an afternoon and an evening session, and representatives from the Canadian Environmental Assessment Agency (CEA Agency), Health Canada and Environment Canada were in attendance.
65. CNSC staff reported that it had received comments in support of the DGR, as well as comments that showed concern with the project. CNSC explained that the public's concerns, discussed in a later section of this *Record of Proceedings*, included the site of the DGR (proximity to Lake Huron), the uniqueness of the project, the nature of the waste destined for the DGR, and the geological and hydrological stability of the site. CNSC staff also stated that it had incorporated some of the public's comments in a revision of the Scoping Document.
66. CNSC staff also reported that meetings were also held with the Chiefs and some council members of the Chippewas of Nawash Unceded First Nation and the Chippewas of Saugeen First Nation. Collectively, these First Nations are referred to as the Saugeen Ojibway Nation (SON). CNSC staff reported that these meetings were held in order to arrange a consultation plan.
67. In its intervention, the SON requested that it be properly consulted throughout the EA process. The SON explained that the consultation and accommodation obligations require appropriate collaborative procedures, designed on a case-by-case basis to reflect the importance of the SON's rights and interests at risk, the extent of potential infringements, and the nature and complexity of the issues that need to be addressed. The SON noted that it wanted to reach an agreement in this regard.

68. CNSC staff stated that Health Canada, NRCan and Environment Canada were all provided with an opportunity to review the Scoping Document. CNSC staff noted that Health Canada and NRCan offered support of the Scoping Document, while Environment Canada provided comments, which were incorporated into the Scoping Document.
69. OPG reported that it had run a Community Consultation Centre in order to educate the public on the issues surrounding the DGR, as well as to answer any questions the public might have had. OPG also stated that it distributed fact sheets to the media and launched an informational website, which allowed for electronic comments to be addressed.
70. OPG reported that it had conducted a telephone poll through an independent contracting service in order to gauge public support for the DGR. OPG presented the results of the poll as being positive and in favour of the DGR.
71. Council from the Municipality of Kincardine stated that it had signed a Memorandum of Understanding with OPG in order to explore the options for long-term storage of the low and intermediate level radioactive waste. Council stated that the DGR was the preferred option, based on the studies that had been conducted. Council reported that a hosting agreement was reached in order to set out the terms and conditions under which the municipality would host the facility.
72. Council from the Municipality of Kincardine stated that OPG conducted an information campaign in order to provide the Municipality of Kincardine with information to make an informed decision. Council noted that the telephone poll conducted by OPG indicated public support for the project.
73. Council members from the four communities surrounding Kincardine, including the Municipality of Arran-Elderslie, the Municipality of South Bruce, Municipality of Brockton and the Municipality of Huron-Kinloss, reported that they, along with council from the Municipality of Kincardine, regularly meet with OPG for updates on the project and for the opportunity to input local opinion. They indicated that OPG has conducted an open consultation process and that the majority of the residents in the four communities surrounding Kincardine have voiced support for this project.
74. Paul Steckle, MP for Huron-Bruce, also stated that OPG had undertaken an extensive and open communications effort on the DGR proposal. Mr. Steckle noted that the public in his riding is aware of the project and it has not been an issue of significance. Mr. Steckle was of the opinion that the majority of his constituents agrees with the proposed project.
75. Several intervenors, including members of the public and organizations including the Canadian Nuclear Association and the Saugeen Shores Chamber of Commerce, stated that the public consultation conducted by OPG was open and transparent.

76. In its intervention, Greenpeace stated that the surveyed region should have been expanded to include the surrounding municipalities of Saugeen Shores, Huron Kinloss, Arran-Elderslie and Brockton, as well as First Nations. In addition, Greenpeace felt that the Durham Region should have been consulted due to the involvement of the OPG NGSs in Pickering and Darlington.
77. The Commission is satisfied with the consultation process and that interested parties, stakeholders, First Nations and the general public were adequately consulted on the scope of the assessment and the ability of the comprehensive study to address issues, as described in CMD 06-H22 and CMD 06-H22.A. However, the Commission is concerned that the technical challenges of the project and the details of the geology and hydrogeology of the site may not have been presented in sufficient detail during the public consultations and as such, expects that this information will be made available further in the EA process.
78. With respect to future consultation during the EA study, the Commission notes that all affected regions should be consulted, including any regions that would be impacted by the environmental effects of the proposed project and the timeframes in which those effects would occur, as discussed in paragraph 50. Consultations should also include the communities from which the waste is generated. The Commission also notes that Fisheries and Oceans Canada and the International Joint Commission should be consulted, as appropriate, if there is a potential for the contamination of Lake Huron.

Recommendation to the Minister of the Environment

79. To make its recommendation to the Minister of the Environment on the continuation of the EA process going forward, the Commission considered the potential adverse environmental effects of the project, the public concerns in relation to the project and the ability of the comprehensive study to address issues related to the project. These considerations are described in the following paragraphs.

Potential of the Project to Cause Adverse Environmental Effects

80. In order to assess the potential of the project to cause adverse environmental effects, CNSC staff carried out a preliminary assessment of the proposed project. During the hearing, CNSC staff provided information with respect to the preliminary assessment, wherein it identified the potential adverse effects during each stage of the project (Site Preparation, Construction, Operation and Long Term). The assessment was based on CNSC staff experience with the site, experience with assessments of similar projects (i.e., projects that deal with long term management of radioactive waste), international experience, and knowledge of the project description.

81. CNSC staff also noted that a detailed and rigorous assessment of effects was not conducted due to it being at a very early stage in the EA. CNSC staff added that the analysis is based on how the DGR would be expected to perform and does not consider abnormal events such as malfunctions or accidents or unexpected findings that would result from a more rigorous assessment of geologic and hydrogeologic conditions at the site.
82. The Commission was not convinced that sufficient information has been considered to support the proposed site for the DGR when taking into consideration the details of the shale and limestone stratigraphy, potential subsurface fractures, and the proximity to one of the Great Lakes. In this respect, the Commission sought assurance that the preliminary assessments for the geological and hydrological studies were not overly simplified.
83. OPG responded that the preliminary study (Golder Associates' Independent Assessment Study) was completed based on information available at the present time and at the early stage of assessment. OPG stated that further, extensive studies would be completed as part of the site characterization plan, and these studies would confirm whether the site would be appropriate for the proposed DGR. CNSC staff stated that it would have to review and approve the site characterization plan before the project assessment could begin.
84. The Commission sought further information concerning the site's proximity to Lake Huron. OPG responded that the Golder Associates' Independent Assessment Study stated that there would be no discharge to Lake Huron. OPG stated that if the site characterization plan were to show that the site is unacceptable, the project would not proceed.
85. With regards to the fact that the project is a new undertaking for Canada, the Commission sought assurance that the international consultation conducted by OPG was applicable and appropriate for the proposed site. OPG stated that it was using experts through the International Geoscience Review Group and experience based on the existing facilities in various countries.
86. The Commission concludes that, based on the preliminary assessment carried out by CNSC staff, the project has the potential to cause adverse environmental effects during the site preparation, construction, operation and decommissioning. Furthermore, the Commission is satisfied that this potential has been adequately described in the EA Track Report included in CMD 06-H22.
87. However, the Commission expresses its concern at the level of uncertainty involved with the mitigation measures described to eliminate or minimize these potential adverse effects. Therefore, the Commission expects that the EA will further explore the mitigation measures necessary under the circumstances that would be technically and economically feasible for the proponent to put in place.

88. Furthermore, the Commission is not convinced that the international experience used by OPG and CNSC staff to determine the potential environmental effects is sufficient and relevant to the proposed site for the DGR and the scope of the waste. Thus, the Commission expects that the information obtained from international experience will be validated early in the EA process.

Public Concerns

89. As described in the *Public Consultation* section above, the Commission is satisfied that OPG and CNSC staff consulted appropriately with the public, First Nations and other interested stakeholders. The Commission is therefore satisfied that the public had adequate opportunity to become informed about the project and express any concerns.
90. CNSC staff reported several public concerns in relation to the proposed project, including the following:
- the proximity of the facility to Lake Huron;
 - this type of project has never been done before;
 - the long-lived radioisotopes pose a risk for many generations;
 - the suitability of sedimentary rock for the DGR;
 - the unpredictability of subsurface water movement;
 - the possibility of a leak; and
 - the added stress on the Great Lakes.
91. Many of these issues are addressed in the *Scope of the Project* section of this *Record of Proceedings*, including the proximity to Lake Huron, the suitability of the limestone, the subsurface water movement, and the lifetime of the radioisotopes. These issues were also raised by intervenors during the hearing.
92. Some intervenors questioned the methods used to solicit public support, such as the host community agreement between OPG and the Municipality of Kincardine. The Commission inquired concerning this agreement, but maintained that this issue was beyond the purview of the CNSC.
93. Citizens for Renewable Energy inquired about comments from Environment Canada in the draft Scoping Document. CSNC staff stated that it had received a letter from Health Canada and NRCan explaining that the Scoping Document was acceptable and that comments were received from Environment Canada. CNSC staff further explained that there is not an obligation to supply these comments in an EA track report, but they are part of the public registry for this EA.
94. In its intervention, the SON explained its concerns with the DGR, including the possibility of long-term adverse environmental effects on the land and Lake Huron. The SON explained that the DGR could affect its vital interests throughout its

traditional territory, including residential communities, places of cultural and spiritual significance, and fisheries. The SON maintained that the project would not be acceptable until a high degree of certainty that harm to the environment would be avoided over many hundreds of years is established.

95. The Commission recognizes that the SON is dependent on the fishing in Lake Huron. The Commission stresses the need to establish further certainty in regards to the possible impact that the DGR may have on the fish in Lake Huron. The Commission expects that this issue will be sufficiently addressed during the EA process.
96. The Commission also stresses the importance of preserving any sacred ground that may be affected by the DGR, throughout the project. During the hearing, the Commission sought confirmation that this would be the case. OPG stated that if there is any indication that an artifact or a sacred area might be impacted in any way, the follow-up program recommended during the EA would include a requirement that archeologists be present during excavations.
97. Many intervenors, including individuals and Greenpeace, were concerned with the lack of a federal policy on low and intermediate level waste disposal. CNSC staff responded that there exists a federal policy that states that waste producers and owners are responsible for managing the waste they produce. Furthermore, the CNSC staff noted that it regulates the ongoing management of radioactive waste under the NSCA.
98. Other intervenors opposed the use of nuclear energy and requested consideration of the phase-out of nuclear energy. In this regard, CNSC staff stated that because much of the waste destined for the DGR is already stored at the WWMF the need for the project would remain, regardless of provincial energy policy.
99. The Commission concurs with CNSC staff that policy decisions would be beyond the scope of an EA for this specific project. Furthermore, the Commission notes that nuclear policy is not within the mandate of the CNSC.
100. Another public concern was the issue of transportation of waste from OPG's sites to the DGR. The Commission sought clarification from CNSC staff regarding this. CNSC staff stated that this activity is already licensed by the CNSC. CNSC staff explained that transportation of nuclear substances and radioactive materials such as radioactive waste is governed by two regulations: the *Packaging and Transport of Nuclear Substances Regulations*¹², which are under the NSCA, and Transport Canada's *Transportation of Dangerous Goods Act*¹³. In its submission, CNSC staff noted that the transportation of waste from the WWMF to the DGR would be assessed in the EA.

¹² SOR/2000-208.

¹³ S.C. 1992, c. 34.

101. Other intervenors, including the five municipalities surrounding the Bruce site, members of the public, and various organizations, including the Saugeen Shores Chamber of Commerce and The Society of Energy Professionals, expressed support for the DGR. These intervenors felt that OPG conducted an open and transparent communication process and expected that this would continue throughout the EA process. Intervenors noted OPG's safety record and felt that, based on the information provided, the DGR would not cause significant adverse environmental effects.
102. The Commission is satisfied that the public concerns have been adequately described in the Scoping Document appended to the EA Track Report included in CMD 06-H22.

Ability of the Comprehensive Study to Address Issues Relating to the Project

103. The Commission considered the information submitted to determine the ability of the comprehensive study to address issues relating to the proposed project.
104. CNSC staff presented a summary of the public comments received on the ability of the comprehensive study to address issues relating to the project along with the responses to the issues raised through the consultation process.
105. CNSC staff explained that the entire scope of the project would be included in a comprehensive study, as would be the case for a panel review. In CMD 06-H22, CNSC staff presented a comparison between a comprehensive study and a panel review.
106. The Commission sought confirmation that the comparison between a comprehensive study and a panel review provided in CNSC staff's CMD was accurate. A representative of the CEA Agency concurred with CNSC staff's comparison.
107. The Commission asked for an explanation of the extent of technical studies that would be done for the comprehensive study track compared to the panel review track. CNSC staff stated that the extent, seriousness and rigour of the technical studies that would be required for the EA would be the same for either track. The comprehensive study track and the review panel track would not change the level of technical information that is required or the level of review of the technical information that would be done.
108. Several intervenors, including the Power Workers' Union and the Society of Energy Professionals, expressed their support for the project to proceed as a comprehensive study. These intervenors concurred with CNSC staff's assessment and believed that all of the issues surrounding the project would be properly addressed in a comprehensive study.

109. Other intervenors requested that the Commission refer the project to a review panel. Several reasons for this were provided, including:
- the proposal is a new project and may set a precedent for permanent underground disposal of radioactive waste;
 - the proposal poses a threat across international borders;
 - concern about radioactive waste disposal; and
 - the CNSC is not independent.
110. In its submission, CNSC staff agreed that the proposal represents a new, first initiative for managing low and intermediate level waste in Canada. However, CNSC staff was of the view that the DGR does not represent a precedent for waste disposal at other locations due to the fact that it is specific to the particular site. CNSC staff explained that other sites have different initiatives for waste disposal.
111. The Commission is not convinced that the proposed project for a DGR does not set a precedent in Canada. The Commission notes that this project would represent the first permanent low and intermediate level waste depository in Canada. Thus the Commission is of the view that the uniqueness of the project is an important factor to consider regarding the ability of the comprehensive study to address issues related to the project.
112. Regarding the threat across international borders, the Commission is of the opinion that the spatial and temporal boundaries of assessment, as discussed in paragraphs 50, 51 and 52 of this *Record of Proceedings*, will remain flexible during the EA study to take into account, if applicable, possible trans-boundary effects. However, the Commission, based on the uncertainty regarding this issue, is of the view that trans-boundary effects would be better addressed by a review panel. This would also facilitate a broader consultation with potential stakeholders and interested parties, including the International Joint Commission.
113. With respect to concerns on radioactive waste disposal, CNSC staff stated that the public's concerns would likely not expand the scope of a panel review beyond what is presented in the Scoping Document. CNSC staff explained that it was unlikely that activities currently approved under the NSCA, such as transport of waste, would be considered by a review panel. In addition, CNSC staff explained that policy decisions, such as nuclear phase out, would be beyond the scope of an EA for this specific project. The Commission agrees with CNSC staff's position on this matter.
114. Further to the First Nation's comments discussed in paragraph 94, the SON felt that a panel review was the best option to address its concerns. The SON stated that it would not believe that the proposed DGR is safe for future generations unless that conclusion is reached by a credible, independent and thorough investigation that addresses all of the issues. The SON further expressed the view that the EA process should be conducted in public with full participation from the SON.

115. The SON was of the opinion that only a review panel could produce an EA report that would be authoritative to both the government and the SON. The SON stated that a review panel would include persons who are familiar with the whole range of technical and social issues, including the perspective, rights and interests of the SON. The SON also asked that it be consulted respecting the membership and the Terms of Reference for that panel.
116. The Commission notes that a review panel may provide the public and First Nations with additional beneficial consultation opportunities through its public hearing process. The Commission feels that a public hearing is a necessary step for this EA and that it could address the perceived credibility and transparency of the process.
117. In considering the comment on the independence of the CNSC, the Commission stated that it is a quasi-judicial independent tribunal and court of record of the Canadian government whose members are appointed by Order in Council. The Commission emphasized that it is independent from any governmental, political or private sector influence. Thus, the Commission does not feel that the issue of independence warrants a referral to a review panel.
118. In addition to the above issues raised by the public and First Nations, the Commission has expressed concern with the uncertainty and assumptions regarding the retrieval of the waste, as discussed under the *Scope of the Project*, and the scope and nature of the waste, as discussed under the *Project Description*. The Commission also raised concern with the uncertainties associated with the boundaries of the assessment, as discussed under the *Spatial and Temporal Boundaries of Assessment*.
119. Furthermore, in the absence of important scientific and engineering data, the Commission is of the view that independent international expertise might be a benefit in order to identify further issues that can be addressed by the EA. In this regard, the Commission notes that a panel review has the benefit of having access to expertise in addition to the licensee and CNSC staff in order to address certain issues, including the geological and hydrological complexity of the project.
120. Based on information presented, the Commission is of the opinion that the issues surrounding the uncertainties associated with the project and the concerns identified to date would be better addressed by a review panel.
121. The Commission is also of the opinion that a recommendation to the Minister of the Environment for a referral to a review panel appears to be appropriate under the circumstances, given the wastes to be managed and the uniqueness, first of kind nature and importance of the project.
122. The Commission concludes that a review panel EA of the project is warranted. Therefore, the Commission, pursuant to paragraph 21(2)(b) of the CEAA, will recommend that the Minister of the Environment refer the project to a review panel.

Conclusion

123. The Commission has considered the information and submissions of the proponent, CNSC staff and the intervenors as presented for reference on the record for the public hearing.
124. The Commission, pursuant to sections 15 and 16 of the CEEA, approves the Scoping Document (EA Guidelines) *Environment Assessment of the Proposal by Ontario Power Generation for a Deep Geologic Repository for Low and Intermediate Level Radioactive Waste* set out in the EA Track Report appended to CMD 06-H22.
125. Pursuant to subsection 21(1) of the CEEA, the Commission is satisfied that the public has had adequate opportunity to express any concern with respect to the scope of the EA and the ability of the comprehensive study to address issues relating to the project.
126. The Commission is satisfied that the EA Track Report appended to CMD 06-H22 adequately describes the scope of project and the scope of the assessment, the public concerns in relation to the project, the potential of the project to cause adverse environmental effects and the ability of the comprehensive study to address issues relating to the project.
127. To fulfil its reporting requirements to the Minister of the Environment pursuant to paragraph 21(2)(a) of the CEEA, the Commission will submit the EA Track Report *Proposed Deep Geologic Repository for Low and Intermediate Level Radioactive Waste* to the Minister as set out in CMD 06-H22 and modified as follows:

Section 7.0 Ability of the Comprehensive Study to Address Issues Relating to the Project is modified as per the discussion found in the same-named section of this *Record of Proceedings*.

Section 8.0 Summary and Recommendation is modified so the Commission recommends to the Minister of Environment to refer the project to a review panel.

APPENDIX 1, Proposed Review Schedule is removed.

128. As part of the EA Track Report, the Commission will also provide the Scoping Document included in the EA Track Report and modified to include the requirement to establish a baseline, using existing monitoring data and site characterization information, for the monitoring environmental effects throughout the project.
129. Pursuant to paragraph 21(2)(a) of the CEAA, the Commission determines that, taking into account the implementation of any appropriate mitigation measures, the project has the potential to cause adverse environmental effects.
130. Pursuant to paragraph 21(2)(b) of the CEAA, the Commission determines that the ability of the comprehensive study to address issues related to the project warrants a recommendation to the Minister of the Environment for her referral to a review panel.
131. The Commission will therefore recommend to the federal Minister of the Environment that the project be referred to a federal Environment Assessment review panel.

Linda J. Keen,
President
Canadian Nuclear Safety Commission

Date of decision: October 23, 2006

Date of release of Reasons for Decision: December 21, 2006

Appendix A – Intervenors

Intervenors	Document Number
Town of Saugeen Shores, represented by Mayor M. Kraemer	CMD 06-H22.2
County of Bruce, represented by Mayor R. Oswald	CMD 06-H22.3
Municipality of Kincardine, represented by Mayor G. Sutton	CMD 06-H22.4
Liz and Frank Barningham	CMD 06-H22.5
Citizens For Renewable Energy, represented by F. Barningham	CMD 06-H22.6
Keith Battler	CMD 06-H22.7
Lawrence A. (Larry) Kraemer	CMD 06-H22.8
South Bruce Impact Advisory Committee, represented by H. Ribey	CMD 06-H22.9
Northwatch	CMD 06-H22.10
Patti Chmelyk	CMD 06-H22.11
Peter Tabuns	CMD 06-H22.12
Paul Steckle, M.P., Huron-Bruce, represented by D. Henkenhaf, Assistant to Paul Steckle	CMD 06-H22.13
Coalition for a Nuclear Free Great Lakes, represented by M. Keegan	CMD 06-H22.14
Power Workers' Union, represented by P. Falconer	CMD 06-H22.15
Sierra Club of Canada	CMD 06-H22.16
Gordon Edwards	CMD 06-H22.17
Greenpeace Canada, represented by D. Martin	CMD 06-H22.18
Nuclear Information and Resource Service, other organizations and individuals, represented by K. Kamps	CMD 06-H22.19
Chris Peabody	CMD 06-H22.20
Corporation of the Municipality of Arran-Elderslie	CMD 06-H22.21
Mariah Branch	CMD 06-H22.22
George Macdonald	CMD 06-H22.23
Hazel Lynn	CMD 06-H22.24
Murray E. Miller	CMD 06-H22.25
Saugeen Shores Chamber of Commerce	CMD 06-H22.26
Bruce Hydro Retirees Association, represented by F. Baker	CMD 06-H22.27
Canadian Nuclear Association	CMD 06-H22.28
Southampton Rotary Club	CMD 06-H22.29
Municipality of South Bruce	CMD 06-H22.30
Great Lakes United	CMD 06-H22.31
Frank E. Caiger-Watson	CMD 06-H22.32
Energy Solutions Expo	CMD 06-H22.33
Algoma-Manitoulin Nuclear Awareness	CMD 06-H22.34
Bill Henderson	CMD 06-H22.35
Friends of the Earth Canada	CMD 06-H22.36
Jeff Harti	CMD 06-H22.37
Bruce Power	CMD 06-H22.38
PROBUS Club of Kincardine	CMD 06-H22.39

Douglas R. Cornett	CMD 06-H22.40
Women's House Serving Bruce and Grey	CMD 06-H22.41
Jim Cameron	CMD 06-H22.42
Doug Freiburger	CMD 06-H22.43
Lynn Ehrle	CMD 06-H22.44
Rosemarie Morris	CMD 06-H22.45
Canadian Environmental Law Association	CMD 06-H22.46
Anna Przychodski	CMD 06-H22.47
Gary A. Karch	CMD 06-H22.48
Fred Fuller	CMD 06-H22.49
Phyllis Creighton	CMD 06-H22.50
Art Hanson	CMD 06-H22.51
Natalie Hanson	CMD 06-H22.52
Vitold Kreutzer	CMD 06-H22.53
Energy Probe Research Foundation	CMD 06-H22.54
Society of Energy Professionals, represented by Dr. J. F. Canosa	CMD 06-H22.55
International Institute of Concern for Public Health, Toronto	CMD 06-H22.56
Saugeen Ojibway Nations, represented by Chief R. Kahgee and Chief Nadjiwan	CMD 06-H22.57
National Council of Women of Canada	CMD 06-H22.58