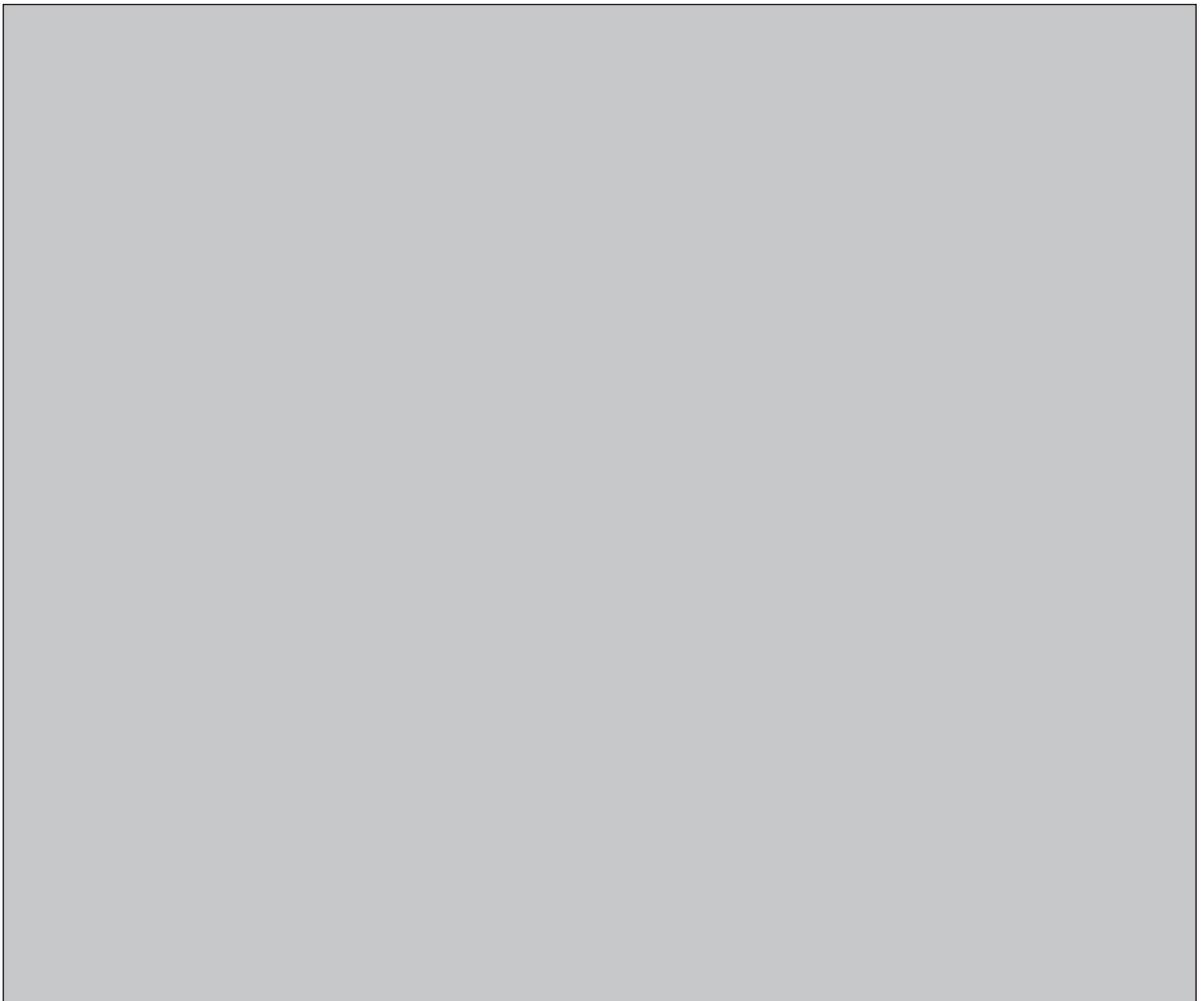


**NWMO BACKGROUND PAPERS**  
**2. SOCIAL AND ETHICAL DIMENSIONS**

**2-4 LONG-TERM MANAGEMENT OF NUCLEAR FUEL WASTE**  
**ISSUES AND CONCERNS RAISED AT NUCLEAR FACILITY SITES 1996 – 2003**

**APPENDIX**

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## **APPENDIX A**

### **DETAILED ISSUE SUMMARIES BY DOCUMENT REVIEWED**

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## INTRODUCTION

This appendix presents a detailed summary of comments, questions and concerns or findings reported in the documents reviewed and considered relevant to the NWMO mandate. Comments that were highly site or project specific were not recorded in this report. In some instances, reports were reviewed but very few or no relevant comments were found. Comments specific to a project but containing a relevant general principle were recorded.

Most reports reviewed relate to nuclear reactor facilities – either the reactors themselves or related used fuel storage facilities. The two exceptions are the reports of the Saskatchewan uranium mining projects, and the Port Hope Area Initiative environmental assessments of long-term low-level radioactive waste management facilities. The latter is of primary relevance to the NWMO mandate, and the only projects that deal with long-term (as opposed to interim) storage of radioactive waste.

The following studies were reviewed:

FEAI #	TITLE/DESCRIPTION	LOCATION	EA START	DECISION DATE	EA TYPE
30619	Port Hope Area Initiative: Port Hope Long-Term Low-Level Radioactive Waste Management Project	Port Hope	Nov 21, 2001		Screening
30615	Port Hope Area Initiative: Port Granby Long-Term Low-Level Radioactive Waste Management Project	Port Granby	Nov 21, 2001		Screening
16965	Pickering NGS Used Fuel Dry Storage Facility	Pickering	Aug 28, 1998	May 11, 1999	Screening
33828	Pickering Waste Management Facility Phase II	Pickering	Jul 4, 2002		Screening
6388	Bruce Used Fuel Dry Storage Facility	Kincardine	Jul 29, 1996	Apr 15, 1999	Comprehensive
29276	Construction and operation of Darlington used fuel dry storage facility	Darlington	Sep 18, 2001		Screening
35287	Modifications to Gentilly 2 SRWMF - Modifications and construction of additional storage structures	Bécancour	Nov 29, 2002		Screening
27931	Modifications to Point Lepreau SRWMF	Point Lepreau	Apr 3, 2001		Screening
19002	Bruce Radioactive Waste Operations Site 2 – Additional storage for low and intermediate level waste	Kincardine	Feb 24, 2000	May 30, 2001	Screening
18822	Pickering A Return to Service	Pickering	Jul 30, 1999	Feb 16, 2001	Screening
29271	Restart of Bruce A Units 3&4	Kincardine	Sep 11, 2001	Jan 6, 2003	Screening

FEAI #	TITLE/DESCRIPTION	LOCATION	EA START	DECISION DATE	EA TYPE
18737	Decommissioning of AECL's Whiteshell Laboratories	Whiteshell	June 2, 1999	Apr 2, 2002	Comprehensive
12495	Waste Treatment Centre Upgrade Project to provide for a five-fold increase in treatment capacity for low level radioactive liquid waste	Chalk River	Oct 2, 1997	Aug 5, 1998	Comprehensive
17283	Re-Opening of Waste Management Area "G"	Chalk River	Jul 16, 1998	Jul 6, 2000	Screening
17289	Construction and operation of waste sorting and handling and waste management area "H" for above-ground and bulk storage for low-level radioactive waste	Chalk River	Jan 12, 1999	Nov 1, 1999	Screening
27068	Construction and operation of ITER Facility	Clarington	Apr 4, 2001		Screening
	Joint Federal - Provincial Panel on Uranium Mining Developments in Northern Saskatchewan		Aug 1991	Nov 1997	Panel

Questions, comments and concerns from each report reviewed are summarized in the categories in which they were found in the individual reports. Accordingly, the reader will not find consistent category headings for the issues reported, and in some instances, may find no categorization at all. Organization of the comments and concerns into categories took place in the writing of the main body of the report. This appendix only presents the "raw" data found.

In some of the documents reviewed no comments relevant to the NWMO mandate were found. In other cases, comments in draft or appendix or EA Report documents were repetitious of comments in the main or final document or the Screening Report. In these cases, like comments were not repeated and hence the reader may find no comments ascribed to a document that was reviewed.

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## **THE PORT HOPE AREA INITIATIVE (PHAI): LONG-TERM LOW-LEVEL RADIOACTIVE WASTE MANAGEMENT PROJECTS**

Atomic Energy of Canada Limited, Low-Level Radioactive Waste Management Office (LLRWMO)

FEAI #

EA Start Date: November 21, 2001

Decision Date:

EA Type: Screening

### Documents Reviewed

1. Public Opinion Assessment of the LLRWMO – Port Hope Area Initiative, February 2002 (AECL)
2. In-depth Examination of the Port Hope Area Initiative: Focus Group Report, March 2002
3. Public Opinion Assessment of the LLRWMO – Port Hope Area Initiative, Wave 2, April 2003 (AECL)

Note: The PHAI is the name given to the initiative comprising the Port Hope and Port Granby Long-Term Low-Level Radioactive Waste Management Projects.

### Findings from Document 1

1. The presence of radioactive waste is one of a number of issues that the community faces. 16% of respondents volunteered radioactive waste and 6% volunteered uranium processing as the most negative aspects contributing to the community's image. A similar percentage cites these as the most important issues facing the community.
2. 72% of community residents know at least something about the presence of low-level radioactive waste (LLRW) and LLRW management facilities in their community, although very few are "very" knowledgeable. 11% think "very often" about living in a community with radioactive waste management facilities and where there is radioactive contaminated soil.
3. 62% of area residents are at least "somewhat" confident in the project's ability to clean up the contaminated soil, and in the safe long-term management of LLRW, but few (18%) are "very confident".
4. Residents' concerns about the PHAI fall into three categories: the process of cleaning up the contaminated soil (48%), issues related to the storage of contaminated soil (25%), and concerns about the impact of the project on the public (21%).
5. Community newspapers are the key source of information about the local LLRW facilities and related programs (cited by 48%). However, direct

communication through newsletters and brochures mailed to their homes is the preferred mechanism for receiving information about clean-up plans and activities.

### Findings from Document 2

1. People see benefits from the PHAI including economic spin-offs and long-term health and safety. However, they have concerns or questions that centre on the transportation, storage, monitoring of the waste now and over the long term, having a “watchdog”, and keeping the public informed.
2. The most effective communications tool is mailing information to their home.
3. Town meetings are another source of information but they need to be structured as information sessions, fairly informal so that people feel comfortable asking their questions, be spread over different days and times, and be well advertised. The use of a facilitator through whom people could feel comfortable speaking to politicians was suggested.
4. There is a preference for an independent group of citizens (“watchdog”) who would act as the public liaison with the LLRWMO, keep the public informed of activities and find the answers to their questions. There is also a perceived role for scientific experts who are independent of the clean-up process. These experts need to have the ability to understand the process and interpret technical information for the public or the local citizens’ committee without derailing the project.
5. Municipal politicians are not viewed as a credible alternative (liaison to the public) because of the sense that they have not wanted to be involved in the past, and people are not as “comfortable” approaching politicians with questions. The Office (LLRWMO) itself is seen as an extension of the clean-up process and may not have an arms-length detachment from the process. It clearly has a role, however, in communicating information to the public and ensuring the project moves ahead expeditiously.

### Findings from Document 3

1. Living in a community with radioactive waste management facilities and areas where there is radioactive contaminated soil is not something people dwell upon. Over two-thirds of the respondents (72%) either ‘never’ or ‘not very often’ think about this fact.
2. The presence of radioactive waste was volunteered by only ten percent (10%) of all respondents as an issue facing the community (a significant decrease from 17% in 2002). However, radioactive waste is still the concern mentioned most frequently in Port Hope Ward 1 (mentioned by 17%) and Ward 2 (mentioned by 12%). By comparison, only 1% mentioned it as an issue in Clarington. Other issues mentioned include hospitals and health care (11%) and population and industrial growth (12%).

3. The public has varying levels of familiarity with the organizations handling radioactive material in the municipalities. The most widely known organization is OPG (91% are 'very' or 'somewhat' familiar). Less familiar to the public are AECL (57%), Cameco (53%), LLRWMO (48%), and Zircatec (37%). Respondents who are familiar with each organization are generally positive in their assessment of how good a job the organization is doing at managing its responsibilities for public health, safety and environmental protection - Zircatec (65%), LLRWMO (64%), Cameco (61%), OPG (57%), and AECL (55%).
4. There is a significant increase in overall awareness of the PHAI from 2002, increasing from 34% to 54%.
5. There are improvements in area residents' confidence in the project's ability to clean up the contaminated soil, and in the long-term safe management of the low level radioactive waste. Overall, 67% (up from 62%) are at least 'somewhat' confident in the project's ability to clean up the contaminated soil and 71% (up from 62%) are confident in the long-term safe management of the waste. However, very few are 'very' confident on both counts (16% and 24% respectively).
6. Residents' concerns about the Port Hope Area Initiative fall into three categories and are similar to those reported in 2002. Most frequently mentioned were concerns about environmental integrity of the projects such as the cleanup process, safe storage of the waste, and protecting public health, safety and the environment (mentioned by 58%). Another twenty-seven percent (27%) mentioned some aspect of the planning and implementation of the projects such as keeping the public informed and how long the process will take. Fifteen percent (15%) are concerned about how the projects might affect them personally, including cost and location of the sites.
7. The newspaper, in particular the local community newspaper, is an important source of information for area residents. It is the key source for local news and information (66%), and for information on the program and facilities (38%).
8. When asked how they would prefer to receive information about the PHAI, 46% of respondents mentioned a brochure or newsletter mailed to their home, 37% mentioned radio, television and newspaper advertising and 28% mentioned articles or stories in the local media. A total of 34% mentioned some form of public participation, whether participating on a committee of local citizens monitoring the project (11%), attending public open houses (10%), talking to staff at the Project Information Exchange (7%) or participating in workshops with technical staff (6%).

- 
9. Several sources are indicated as providing accurate and complete information about the PHAI. In Ward 1, independent scientists, the LLRWMO, and the media received a comparable number of mentions (18% – 22%). In Ward 2, independent scientists ranked highest (mentioned by 31%). The media, a committee of local citizens and the LLRWMO (mentioned by 12% - 14%) ranked second behind independent scientists. And in Ward 4, where the LLRWMO is not as well known outside Port Granby and its immediate surroundings, independent scientists, the media and a committee of local citizens are ranked highest (mentioned by 18% - 21%).
  10. Residents (71%, up from 64% in 2002) are likely to experience an increase in satisfaction with the completion of the Port Hope Area Initiative, while most of the remainder does not know (27%). (Tables 3.1.1, 5.3.1)

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## PORT HOPE LONG-TERM LOW-LEVEL RADIOACTIVE WASTE MANAGEMENT PROJECT

FEAI # 30619

EA Start Date: November 21, 2001

Decision Date: EA incomplete.

EA Type: Screening

### Documents Reviewed

1. Notes from Alternative Means Workshop, June 26, 2002
2. Second Alternative Means Workshop (Report and Executive Summary), October 24, 2002
3. Report on Third Alternative Means Workshop, April 12, 2003
4. Report on Alternative Means Open House, June 12, 2003
5. Report on Valued Ecosystems Components Workshop, March 5, 2003

### Questions, Comments and Concerns – from Document 1

#### 1. *Process / Responsibility:*

- This is a federal problem and a federal solution is necessary. Accepting \$10 million to clean up a federal problem (is wrong). Send the money back to Ottawa.
- There is no such thing as safe storage.
- The framework cannot achieve its objectives in the best interest of the people of Port Hope.

#### 2. *Facility Location:*

- How can we have confidence in toxin containment lasting 500 years?
- Very concerned that we are dealing with waste that we can't smell, taste or see and that you need an instrument to measure... scared of the problem... need to solve problem for the benefit of the people... keep it away from children, citizens.
- It is better to leave the waste where it is, mark and monitor it.
- Leaving it where it is has been tried for 50 years and hasn't worked.
- Consider decentralizing the storage.
- One site (not three) is the best solution for transportation, safe storage, monitoring and good site selection.
- An appropriate compensation package is needed.
- If we are truly worried about the stigma from this waste, then get it out of

- 
- the community.
- The proposed solution is probably the best that can be achieved
  - The base parameters for locating a site should be established on environmental (watershed) grounds. There is no engineered containment/barrier that could isolate these wastes for thousands of years.
  - It's a done deed. Locals cannot provide alternatives.
3. *Transportation:* With such a large number of truckloads, there is a greater chance of an accident occurring. There must be other methods of transport.
  4. *Monitoring:* Design the monitoring system so that it can be upgraded as new technology is developed.
  5. *Retrievability:*
    - There may be some value in the waste... someday it may need to be retrieved.
    - It makes more sense to retrieve from one site.
  6. *External / Expert Review:*
    - Need independent technical expertise to review and find pluses.
    - Need objective panel to hear citizens' concerns. Money should be made available to community to help them get reasonable outside advice.
    - Need people who are not biased on (the nuclear) subject in the meeting / forum / workshop to provide alternative thoughts.
    - Funds should be available for research from experts not associated with the nuclear industry.
  7. *International / National Experience:* Use examples and experience from around the world. We should learn from experience elsewhere.
  8. *Health and Safety:*
    - No health effects have been noted that suggest a serious problem.
    - Safety should be on the front burner.
    - Considering health/environment means that safety will be considered.
    - Radiation levels need to be explained so the public can understand the issue. There is fear from secrecy and misunderstanding.
    - The public does not know the effects on humans due to long-term exposure from low-level radioactive waste... education is needed on effect of toxins in air, water and soil. A study is needed to determine how dangerous it is.
    - A baseline health study is needed.

- 
- The EA Scoping document deals only with the present and future. It should consider the past as well.
  - Funds should be available for a genuine health study of the people who have lived here.
9. *Environment:* It is important that the waste not be near any major body of water or source stream to protect our water supplies.
10. *Security:*
- Will the waste be worth anything to anyone who may want to harm us (i.e. sabotage, terrorism)?
  - Residents should have access to the local emergency measures plan. Port Hope should get protection under the provincial nuclear plan.
11. *Consultation:*
- Need a citizen referendum on the issue.
  - Community funding should be made available.

#### Questions, Comments and Concerns – from Document 2

1. *Site Location:*
- The site should be kept away from private residences and schools.
  - Buy a buffer zone (with federal funds) around whichever site is chosen.
2. *Facility Design:*
- Techniques used should have sufficient funding to retrieve waste in case of failure.
  - A 500-year design life is not good enough. It should last forever.
  - Use existing technology to confirm wastes are contained. The facilities must be continually upgraded as technology becomes available.
  - Examine facilities in other jurisdictions for design features.
  - Include monitoring, leachate collection and contingency response in event of leaks.
3. *Transportation:*
- Vehicles should be completely self-contained.
  - All personnel handling or working with the material must be bonded and trained.
  - Safety of the route should be the primary concern (i.e., pedestrian and vehicle routes/activity). Keep vehicular traffic away from pedestrians, schools, etc. There should be roads where no parking is allowed.
  - Timing of movement should be considered, i.e. during work hours and

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when children are in school; not during summer holidays;

4. *Monitoring:*

- Air, groundwater, surface water, and land need to be monitored. Ensure no leakage by using perimeter wells, monitors between layers, video monitoring, and cross-section inspections.
- Do not privately contract the monitoring system – it must remain public; independent monitoring should be conducted. Real time readouts should be posted on a Web site.
- There should be public sector control – however, the community must oversee the project; train one or more (local) representatives to oversee monitoring/facility management; a local government/town department committee should provide Municipal control.
- Adopt international standards where they exceed Canadian standards. Canadian standards are inadequate. The Canadian Nuclear Safety Commission and the International Atomic Energy Agency should be responsible for safety.
- The Federal government must ensure perpetual funding; the cost of monitoring, facility management, upgrading and maintenance should be covered by government grants. Costs should never be drawn from local taxes.
- If work (e.g., repairs) is done on the facility, the warranty should last an additional 500 years.

Questions, Comments and Concerns – from Document 3

1. “Technically feasible” should be defined to include:
  - Consideration of long-term safety and manageability;
  - Ability to handle additional volumes of (historic low-level) radioactive wastes should they be discovered in future;
  - Standards recognized locally and internationally; and
  - Consideration of meeting the principle that emissions shall be “as low as reasonably achievable” (ALARA).
2. While accepted as a principle, there was a diversity of opinion as to what are the “community values” the Project should reflect. Suggestions included:
  - An honourable legacy for future generations; and more specifically,
  - Protection of human safety, the environment, future development, quality of life, community pride, property values, asset values, personal investment in the community, and long-term facility integrity.
3. Participants felt that “economic feasibility” should be interpreted to mean:

- 
- No cost burden to the (host) Municipality;
  - The facility/system should have adequate, long-term and dedicated resources for construction, maintenance, management, and monitoring, including funds for contingencies;
  - Funds should cover municipal infrastructure needs resulting from the Project; and
  - To ensure sound financial management, the Project should be subject to an independent financial audit accessible to the community. While financial prudence is important, cost should not compromise safety and environmental integrity.
4. The goal of protecting human health and safety was interpreted to include:
- Application of the highest standards reflecting the ALARA principle with community input in setting the standards;
  - Consideration of the health and safety effects from facility construction, operation, malfunctions/accidents and related truck traffic; and
  - Monitoring of the environment and the health and safety of local and regional residents to ensure these standards are met.
5. "Environment" was defined to include both the socio-economic and natural environments. It was suggested that:
- There should be no environmental effects outside the facility over the long-term;
  - (Host) municipal infrastructure, and future development/growth opportunities need to be protected;
  - A comprehensive and independent long-term monitoring system must be established with local community oversight and independent, expert advice, with funding as required for the long-term; and
  - Locations adversely affected by the (project) should be restored.

#### Questions, Comments and Concerns – from Document 4

- Would it not be safer to store and monitor the waste in one repository? Reasons to do so include: possible future financial problems and spillage to one site as opposed to three. Then renegotiate a financial package to reflect the real value to the host community.
- Putting waste in the centre of a town is unacceptable.

#### Questions, Comments and Concerns – from Document 5

This document reports on a workshop that focused on very site-specific and project-specific aspects of the EA. There were no comments recorded of relevance to the NWMO management framework.

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## THE PORT GRANBY LONG-TERM LOW-LEVEL RADIOACTIVE WASTE MANAGEMENT PROJECT

FEAI # 30615

EA Start Date: November 21, 2001

Decision Date:

EA Type: Screening

### Documents Reviewed

1. Notes from Alternative Means Workshop, June 25, 2002
2. Second Alternative Means Workshop (Report and Executive Summary), October 23, 2002
3. Report on Third Alternative Means Workshop, March 29, 2003
4. Report on Alternative Means Open House, June 24, 2003
5. Report on Valued Ecosystems Components Workshop, March 4, 2003

### Questions, Comments and Concerns – from Document 1

#### 1. *Process/Responsibilities:*

- All money is federal (i.e. taxpayers) - should be cost sharing with the industry.
- First polluters should be responsible - let them refine it - taxpayers are being left with responsibility.
- I'm concerned that the government will take the cheapest solution and not the best or most appropriate
- Don't consider economic feasibility.
- Any solution should be permanent - best possible solution for the long term.

#### 2. *Facility Location:*

- We should limit the movement of existing waste due to the potential hazard to workers and neighbours.
- For the long term it is logical to move the waste away from the shoreline.

3. *Monitoring:* To successfully manage the waste you must be able to visually monitor it.

4. *Retrievability:* Recovery (and usage) of certain materials in the waste should be researched.

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5. *External/Expert Review:*

- An independent experienced engineer is needed to review the work.
- Port Granby should form their own committee composed of citizens of Port Granby planning department, citizen at large, council, with resources/expertise

6. *Human Health and Safety*

- Identify through risk assessment the contaminant hazard to human health and the environment.
- Need information on the hazards of moving this toxic substance.

7. *Environmental Concerns*

- Climate, topographical and societal change is difficult to comprehend over 500 years. It is a long time to consider.
- Global warming will impact the site, needs to be studied/considered i.e. lake levels.

8. *Security/Emergency:* Ensure a process is in place when certain emergency measures will be triggered.

9. *Public Consultation:* Under principles of Environmental Assessment public needs confidence that their input will be heard. This is the key to ensuring that the right decisions will be made.

Questions, Comments and Concerns – from Document 2

1. *Facility Monitoring*

- The monitoring system must be upgradeable as new technology becomes available, and should include air, soil, water and biota monitoring.
- There should be periodic, independent audits of the monitoring process and data.

This document reports on a workshop that focused on very site-specific and project-specific aspects of the EA. There were no other comments recorded of relevance to the NWMO management framework.

Questions, Comments and Concerns – from Document 3

1. *Technical feasibility* was interpreted to mean:

- The Project should be feasible for the long-term and constructed with proven, currently available technology
- External peer review, quality assurance/quality control (QA/QC) procedures;

- 
- Proper security, retrievability of wastes and a functional end-use should be important features built into the facility design.
2. *Community values* were interpreted to include both local and broader regional interests. Important community values include:
- Protection of human health and the environment;
  - Minimal disruption to community life, including business and agriculture;
  - Aesthetically pleasing facility design; and
  - Community peace of mind that the wastes are effectively dealt with.
3. *Economic feasibility* criteria should include:
- That there be no long-term economic burden to community taxpayers;
  - Efficiency in expenditure of monies for initial construction;
  - Long-term management and provision for contingency costs;
  - Community safety not to be compromised in the interest of cost saving;
  - Funds available for public education.

#### Questions, Comments and Concerns – from Document 4

This document reports on a workshop that focused on very site-specific and project-specific aspects of the EA. There were no comments recorded of relevance to the NWMO management framework.

#### Questions, Comments and Concerns – from Document 5

*Trust in the EA Process:* The 1978 Environmental Assessment decision on a refinery and waste management site proposal reportedly concluded that the field north of Lakeshore Road was not suitable for a waste management site. This is why the community feels that the waste must not go north of Lakeshore Road. There was concern that additional waste from other sources may be brought into the proposed waste management facility in future if this 1978 EA decision no longer applies.

This document reports on a workshop that focused on very site-specific and project-specific aspects of the EA. There were no other comments recorded of relevance to the NWMO management framework.

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## **PICKERING NGS USED FUEL DRY STORAGE FACILITY**

FEAI # 16965

EA Start Date: August 28, 1998

Decision Date: May 11, 1999

EA Type: Screening

### Documents Reviewed

1. Pickering Used Fuel Dry Storage Facility – Stage II Screening EA, Ontario Hydro, September 1998
2. Pickering Used Fuel Dry Storage Facility – Stage II, Screening Report, AECB

### Questions, Comments and Concerns – from Document 1

1. Length of time used fuel will be stored at Pickering site:
  - There is some expectation that used fuel will only be stored on site until a longer-term, off-site used fuel management facility becomes available.
  - Will off-site storage facilities be developed? Where? When?

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## PICKERING WASTE MANAGEMENT FACILITY PHASE II

FEAI # 33828

EA Start Date: July 4, 2002

Decision Date:

EA Type: Screening

### Documents Reviewed

1. Pickering Waste Management Facility Phase II, Draft Environmental Assessment Study Report, Ontario Power Generation, June 2003
2. Pickering Waste Management Facility Phase II, Draft Environmental Assessment Study Report, Technical Support Documents, Community and Stakeholder Consultation and Communication, Ontario Power Generation, June 2003
3. Pickering Waste Management Facility Phase II, Draft Environmental Assessment Study Report, Technical Support Documents, Aboriginal Interests, Ontario Power Generation, June 2003
4. Open House Reports, June 2002
5. Open House Reports, October 2002
6. Open House Reports, March 2003

### Questions, Comments and Concerns – from Documents 1, 2 and 3

1. *Safety of Dry Storage:*
  - How safe is dry storage?
  - How do DSCs contain radiation?
  - Will concrete used in DSCs deteriorate over time?
  - Is the technology used elsewhere in North America or the world?
2. *Increase in Radioactivity to the Public from PWF2:*
  - What are the likely effects on the health of workers and the public?
  - Will the facility meet or exceed regulatory limits on public exposure to man-made radiation?
3. *Potential for an Accident involving a DSC:*
  - What is the potential for an accident and what are the consequences?
4. *Stormwater Management:*
  - What are the potential pathways of stormwater to the lake and how will this be managed?

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5. *Wetland and Wildlife Corridor Enhancement:*

- Opportunities exist to enhance this corridor near the site, for example through vegetation screening that would also limit key sight lines from the Water front Trail to the site.

6. *Long-Term Management of Used Fuel:*

- What is the integrity of DSCs after its 50-year design life?
- There is still no long-term solution.
- What will cost of long-term disposal be and who will pay?

7. *Security and the Threat of Terrorism:*

- What is being done to prevent or deal with possible sabotage or terrorist attacks by land water or air?
- How will the community be warned or protected in the event of a sabotage or terrorist threat?

8. *Aboriginal Interests and Concerns:*

- An archaeological survey should be conducted on the potential sites.
- What would be the impact of earthquakes, plane crashes and terrorism on the Dry Storage Facility?
- What are the health effects of a radiation release from a DSC?
- Will there be employment opportunities for aboriginals?
- The Aboriginal Interests Assessment concluded there were no measurable changes to the existing environmental conditions for Aboriginal Communities, Traditional Land and Resource Use, Culture and Heritage. Interested First Nations and Métis representatives were consulted during the assessment and did not identify any specific Aboriginal interests, resources, land uses, activities or community concerns that might be adversely affected by the project.

Questions, Comments and Concerns – from Document 4

1. Some confusion between this project and the long-term disposal option, necessitating an explanation concerning the mandate of the NWMO.
2. Main concerns revolved around:
  - Safety of interim storage of used fuel in their community;
  - Security of the facility in post 9/11 world - potential for terrorist attacks (airborne attack, theft of used fuel);
  - Accidents;
  - Opposition to long-term storage on site; and

- Lack of a long-term solution for used fuel disposal and the need for public participation in future discussions of long-term storage options.

3. Other Concerns:

- Is Ontario Power Generation's liability insurance under the Nuclear Liability Act adequate given current housing and business values?
- Radiation effects if container leaked due to a natural disaster like an earthquake.
- Effect of privatization on safety and public involvement in approvals processes.
- Permanent storage of used fuel on site not acceptable – why not geological disposal in N. Ontario.
- Security measures transporting used fuel from wet to dry storage.
- Is there enough capacity to store all the used fuel produced over the station's expected operating life?
- Radiation/environmental effect if container dropped or leaked.
- Which is safer, wet or dry storage?

Questions, Comments and Concerns – from Document 5

- Is the technology safe:
- What has experience been elsewhere?
- How much radiation escapes from DSCs?
- Can DSCs withstand earthquakes?
- Wisdom of storing used fuel adjacent to Lake Ontario and in a high-density population area.
- What is the long-term strategy for the management of used nuclear fuel:
- If this facility is for interim storage, what happens after this period?
- Will used fuel from other nuclear facilities be stored here?
- How do other countries deal with their used fuel in the short and long term?
- Why not reprocess the used fuel?
- Radiation/health effects:
- Dosage numbers are very confusing and not meaningful to lay people.
- Responses to questions have a “don't worry” attitude.
- What is the definition of “acceptable”?

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Questions, Comments and Concerns – from Document 6

1. *Need for and Design of the Facility:*

- Why is more dry storage space needed?
- Why can't used fuel be reprocessed for fuel or recycled into other products?
- Is there enough capacity to store all the used fuel produced over the station's expected operating life?
- Why not build more wet storage?
- Are there other facilities like this?
- Is the design and technology safe?
- How will DSCs be safely moved to PWMF2?

2. *Effects of Increased Radiation from PWMF2 on Public, Worker and Community Health:*

- Some perceive an increased incidence of cancer in Durham Region.
- How will the increased radiation levels compare with existing levels and what impact will these exposures have on workers and the public?
- How are these levels and exposures monitored?
- What are the chronic effects on local residents of the increased radiation levels?
- How close would the public have to be to get a "high dose"?

3. *Security and Safety of Dry Storage Facilities:*

- We need to enhance security post 9/11 to withstand sabotage and attacks from the land air and water and any resulting explosions and fires.
- Buildings should have concrete dome or be underground.
- Will the concrete deteriorate through aging or radiation over the 50-year life of DSCs, thereby releasing radiation?
- How will local residents be informed if there were a problem or nuclear emergency?

4. *Long Term Management of Used Nuclear Fuel:*

- What happens after 50 years?

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## **BRUCE USED FUEL DRY STORAGE FACILITY**

FEAI # 6388

EA Start Date: July 29, 1996

Decision Date: April 15, 1999

EA Type: Comprehensive

### Documents Reviewed

1. Bruce Used Fuel Dry Storage Facility, Environmental Assessment, Ontario Hydro, December 1997
2. Addendum to Bruce Used Fuel Dry Storage Facility, Environmental Assessment, Ontario Hydro, April 1997
3. Ontario Hydro Responses to Public Comments on the Environmental Assessment of the Proposed Bruce Used Fuel Dry Storage Project, February 25, 1999
4. Bruce Used Fuel Dry Storage Facility, Disposition of Comments Received, CEAA Public Consultation Period, October/November 1998
5. Comprehensive Study For The Ontario Hydro Bruce Used Fuel Dry Storage Project, Summary Report, AECB, August 1998

### Questions, Comments and Concerns – from Document 1

#### *1. General Public Issues and Concerns:*

- How will the fuel be secured in the storage area?
- What are the possibilities of fabricating the containers locally?
- Why not build more wet storage facilities?
- How long are the current storage bays good for?
- Will the dry storage facility be used to store fuel from other locations?
- Is the funding available to move used fuel to permanent disposal?

#### *2. Specific Issues/Concerns:*

- Are there international standards for radioactive waste storage?
- What other countries use dry storage?
- How does the amount of Canadian nuclear waste compare to other countries?
- What is the potential importation of radioactive and conventional waste from other jurisdictions to BNPD?
- What is the timing and funding of permanent radioactive waste disposal?
- There are concerns about AECB deregulation of Ontario Hydro's Heavy

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Water Plant operation.

- There are concerns about tritium in the environment around BNPD.
- There are concerns about interim maximum concentrations for tritium in drinking water.
- There are concerns about MOX.
- There are concerns about the integrity of existing BNPD radioactive waste storage sites.
- There are concerns about the overall risk assessment of BNPD operations.
- Human health/radiological effects and cumulative effects.

3. *Aboriginal Interests:*

- There is opposition to the concept of geological disposal in the Canadian Shield and transportation of radioactive waste across First Nations territory.
- Issues focused on treaty rights, traditional land use and harvesting activities, and way of life.
- There are concerns about burial grounds on the BNPD site.

Questions, Comments and Concerns – from Document 3

1. *Support for the Project:*

- Support is mostly from municipal and regional governments, in some cases conditional upon:
  - Proposed facility only being used to store radioactive waste from BNPD; and
  - Proposed facility only being used as an interim measure until permanent storage is identified.

2. *Full and Transparent Public Review Under CEEA Needed:*

- There are concerns about health, safety, accidents, malfunctions, radioactivity and tritium contamination and their cumulative effects.
- Bruce is becoming a dumping ground for nuclear waste, containers are not transportable and the facility will become a long-term facility because no progress is being made on permanent disposal.
- It is not wise to store large quantity of radioactive material near Lake Huron.
- There is no trust in Ontario Hydro's capacity to self-assess.

- An unbiased party should conduct assessments.
- Confidence can only be restored by a full independent public review.

3. *Inadequate Data/Additional Studies Needed:*

- The database of previous conditions is inadequate.
- There are shortcomings in present monitoring of long-term effects.
- There is insufficient baseline data concerning radioactivity, especially tritium and carbon-14 levels, making it difficult to detect incremental changes, ascribe them to a specific action or determine cumulative effects.
- There is inadequate meteorological data to predict dispersion of released material.
- There is inadequate groundwater flow pattern information and methods to determine sources of groundwater contamination.
- The surface water collection system is inadequate. In the event of a severe storm resulting in loss of containment, radionuclides could flow into Lake Huron.

4. *Fish & Fisheries/Aquatic Effects:*

- There are aquatic concerns because of issues of water contamination and nearby streams, rivers and Lake Huron.
- The surrounding and traditional lands and waters are already contaminated with radioactive substances (high tritium levels).
- There is a lack of habitat quality baselines.
- The tritium content in fish should be measured.
- There are EA deficiencies in assessing aquatic biology:
  - Fails to consider groundwater linkages between two area streams;
  - Fails to provide best practice quantitative assessment of fish populations, making it difficult to establish post-construction effects and needed remediation;
  - Fails to provide data or methods used to assess contaminant runoff;
  - Deficient baseline study assumptions and proposed environmental monitoring are deficient; and
  - Approach to determining significance of environmental effects is deficient – no reference to current standards, the carrying capacity for impacted aquatic resources or tolerance levels.

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5. *Effects on First Nations:*

- There are concerns about the effects of BNPD on the fishing industry and the eco-system of Lake Huron and the Bruce Peninsula.
- First Nations were not consulted in the development of BNPD.
- The impact on the health and economic viability of the Native community needs to be fully examined.
- First nations have legal rights to Lake Huron fishery, with important commercial, economic, subsistence, cultural, spiritual, symbolic and educational components.
- There are long standing concerns about the planned storage site on the shores of lake Huron.

6. *Cumulative Effects Assessment (CEA):*

- The 1998 Addendum on CEA fails to address Board requirements to focus on increased risk of exposure to radiation, fails to address fisheries issues and fails to meet Canadian best practices for such assessments.
- The CEA does not:
  - Adequately integrate the EA of the proposed project with various options to the proposed project; and
  - Include effects from significant abnormal events.
- Several significant public environmental concerns were not identified as VECs, including radiation dose to the public, air quality and groundwater.
- The CEA failed to consider spatial and temporal overlap of radiation dose. Aboriginals may have overlap of exposure if they work at BNPD, eat fish from the lake, etc.
- There is No adequate CEA of radionuclides, such as elevated tritium levels.
- There is no attempt to assess the possible additive effects of each predicted effect or to establish the threshold beyond which an effect is likely to have significant ecological effects.

7. *Tritium Contamination:*

- Since 1997 there is evidence of greater tritium concentration at BNPD, for example at on site wells and in off site fruit.
- There is no comparative data by which to assess radioactivity levels in Lake Huron fish, which show tritium concentrations eleven times higher than measured at Darlington.

8. *Health:*

- Given past underestimation of the risks associated with radionuclides, it is

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uncertain whether new risk estimates are adequately protective of health.

- There are already serious risks from low dose radiation from the site. Health effects of this low exposure to tritium over extended period of years are unknown.
- Before concluding that there are no adverse health effects, critical dose assessment should be recalculated using the most sensitive receptors and conservative assumptions.
- Ontario Hydro rarely refers to human consequences of chronic exposure to low-level radiation, for example cancer or genetic damage.
- Assumptions and methodology to formulate critical group dosage calculations are suspect. Background radiation levels are overestimated to permit underestimation of future radiation from the project.

9. *Uncertainties:*

- There is skepticism about the temporary nature of the proposal.
- It is incorrect to present the project as an interim solution when it is likely that the facility may become a permanent disposal site by default.
- Will used fuel from other locations be transferred here?
- Have the DSCs been designed for a longer than 50 year life?
- The proposal should be assessed in light of long-term storage.
- Is there a contingency plan if used fuel burial is delayed or rejected?
- Put project on hold until decision on long-term disposal.
- What is the long-term plan? Who will pay?
- In the absence of data or scientific knowledge of possible effects, the application of the precautionary principle is required.
- Given all the uncertainties, a panel review is required.

10. *Container Design/Loading/Fuel Transfer:*

- There is concern about an untested system of dry storage used for a long period within 1300m of Lake Huron.
- There is no independent testing and certification of the containers.
- What is the plan after the containers are obsolete (life span 50 years)?
- Containers are not transportable. This is inconsistent with commitment to transfer the waste to another location, given the risks inherent in repackaging used fuel in the future.
- During loading from wet to dry storage, what will the radiation levels be, how will they be contained, and is the shielding adequate for operators?

- The proposed facility is not as secure as other facilities OH uses for containing radioactive materials.
- The hazards related to fuel transfers are not addressed.
- Whole system should be reviewed from bay to storage pad.

*11. Siting of the Facility:*

- Locating such a facility less than 1.5 km from Lake Huron is questionable.
- The Great Lakes are a nearly closed ecosystem from which millions of people use for drinking water as well as commercial and recreational activities.

*12. Extending the Life of BNPD:*

- Removing the spent fuel bundles opens space for fresh spent fuel, providing the proponent an opportunity of re-tubing Bruce A to burn MOX fuels from plutonium warheads, and storing subsequent waste on site until 2088. Ontario Hydro has enough space in the spent fuel bays, built and planned, to meet the end of the nuclear program.
- The project will greatly increase the capacity and possibly extend the duration of high-level waste stored at the site, perhaps indefinitely, thus transforming the nature of the entire BNPD facility.
- The proposal increases the likelihood of completing the construction of BHWP C and D.

*13. Alternative Means of Carrying out the Project:*

- Alternatives have not been reviewed in sufficient detail.
- Ontario Hydro has decided, using corporate criteria unrelated to factors of economic and technical feasibility, health, safety or environmental protection, that there is no acceptable option to be discussed.
- Already existing, viable and safer alternatives to nuclear power should be considered. Better analysis of the do nothing option – early shutdown of reactors, is needed.
- Better analysis of constructing additional wet storage is needed.

*14. MOX Fuel:*

- Some believe Ontario Hydro intends to burn MOX fuel made from plutonium warheads at BNPD and accept the long-term storage of the ensuing waste. If the proposed facility is built, it may contribute to the life of BNPD, providing added incentive to restart Bruce A and encourage the use of MOX.

*15. Safety/Security:*

- There are concerns about the safety of the site from terrorist activity.

- How will Ontario Hydro contain leaking radionuclides in the event of an accident?
- The facility is not as safe as other facilities used by Ontario Hydro for storage.
- The accident analysis is superficial.

*16. Mitigation Measures and Compensation:*

- How will Ontario Hydro go about implementing appropriate mitigation or compensation for environmental impacts that cannot be avoided?
- The use of more robust containers should be considered, given expected changes in national dose regulations.
- There are no specific actions to limit the harmful effects of tritium-contaminated groundwater.

*17. Monitoring:*

- There are concerns about the radiological environmental monitoring program, for example the lack of specifics about indicator species and other accepted scientific practices.
- Assurances are needed in the monitoring and planning stages that there is no chance of a radioactive leak into the lake.
- Will smears be taken regularly on the canisters as some contaminants only surface after the thermal cycle?

*18. General:*

- No precedent for the proposed facility (environmental setting is different from similar facilities elsewhere, i.e. commercial fishery);
- New set of circumstances under which the project is proposed, i.e. reorganization of the energy sector, legal acceptance of the rights and interests of Aboriginal peoples, uncertainties concerning the viability of the nuclear industry, failure of the deep geological burial of high-level waste;
- Concerned will get waste from Pickering and Darlington;
- Proponent should not determine scope;
- Project will reinforce perception of BNPD as a waste management facility if facilities for permanent disposal are not available;
- Market value of properties nearby reduced by 35%;
- Project not subject to provincial EA so no provincial public hearing and
- Since the project has not been referred for a panel review, participant funding is not available.

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## CONSTRUCTION AND OPERATION OF DARLINGTON USED FUEL DRY STORAGE FACILITY

FEAI # 29276

EA Start Date: September 18, 2001

Decision Date:

EA Type: Screening

### Documents Reviewed

1. Environmental Assessment Study Report, Volume 1, Main Report, Ontario Power Generation, March 2003
2. Report on First Round of Public Open Houses, June 2001 (OPG)
3. Report on Second Round of Public Open Houses, April 2002 (OPG)
4. Report on Third Round of Public Open Houses, September 2002 (OPG)
5. Report on Stakeholder Workshop, October 13, 2001 (OPG)
6. Report on Stakeholder Workshop #2, June 22, 2002 (OPG)

### Questions, Comments and Concerns – from Document 1

1. *Long-term Disposal / Management of Used Fuel:* The most frequently raised concern was that the interim storage facility would transform into a long-term facility for the storage of used nuclear fuel, and possibly other radioactive waste. A related concern was who will pay for long-term storage of these wastes? In response, OPG explained the provisions of the Nuclear Fuel Waste Act (NFWA) and the existence of a segregated fund with some \$1.6 billion set aside for long-term waste management of used fuel. This information was included in a widely distributed fact sheet.
2. *Environmental Effects:* Concern was expressed by some about the effects of this project on adjacent Lake Ontario. Specifically, people mentioned contamination of the lake (and therefore drinking) water, radioactive storm water management, effects of thermal emissions, buildup of algae in the lake and toxic waste management. In response, OPG issued a fact sheet detailing, among the environmental protections that would be built into the project design and engineering.
3. *Stigma:* This facility is adjacent to a Provincial Park. Park authorities expressed concern that a growing, visible nuclear waste facility would create a stigma for the area and discourage visitors to the park, which shares the name (Darlington) with the nuclear facility. OPG responded by providing Park staff with a tour of the facility and ensuring they were properly informed to answer questions about the facility from members of the public. Darlington Nuclear Generating Station (DNGS) and DUFDS newsletters, fact sheets and brochures were made available to Park visitors.

4. *Safety*: Comments about safety of the proposed facility included concern about the 50-year DSC design life and what happens thereafter, radioactive leakage from DSCs, radiation levels in the vicinity of DSCs, effects in the event of an accident during loading or transportation and effects of a train derailment and intrusion into the facility. The OPG response was, again, to provide specific information addressing these questions, and to include in the EA a detailed radiation effects calculation in the event of a postulated worst-case accident scenario.
5. *Security*: This EA was in progress at the time of the 9/11 terrorist attacks. Concerns were expressed about the security measures to protect the proposed facility from terrorist attack. OPG responded by explaining that it was complying with CNSC-ordered security enhancements including establishment of an armed on-site response capability, improved security screening, protection against forced vehicle entry and enhanced inspection of people entering the plants.

#### Questions, Comments and Concerns – from Document 2

1. Most frequently raised at this open house, were questions about the *safety* of the proposed project. What happens if there's an earthquake or a plane crashes into the facility? What about the effects of the blasting at the St. Mary's Cement quarry next door? (The larger issue here is effects of the environment on the project.) How will workers be protected? And the comment was made that the facility should be as close as possible to the fuel bays to minimize transportation distances.
2. *Environmental Effects*: See comments noted for Document #1.
3. *Technical Description*: A number of questions related to the technical description of the project, such as how the facility would be monitored, what would be its relationship to the proposed adjacent Iter Project (some were under the impression that used nuclear fuel would be the feedstock for Iter), where else used fuel dry storage is in place, and whether used fuel could be used to create an atomic bomb (a security concern).

#### Questions, Comments and Concerns – from Document 3

1. Concern was expressed about the proximity of the facility to Lake Ontario and possible resulting effects on the lake (*environmental effects*), and the potential effects of a train wreck or explosion in the vicinity of the facility (*safety*).

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Questions, Comments and Concerns – from Document 4

1. *Health and Environmental Effects* of the facility due to its proximity to the lake and to large population centers was the most frequently raised concern at this round of Open Houses.
2. *Safety* of interim storage and of the DSC design was raised by a few visitors to the open houses. In particular, questions were asked about what is done if a DSC is found to be leaking, and whether the DSCs would require disposal as radioactive waste themselves at the end of their design life.
3. *Long-term waste management*: A number of open house visitors expressed concern about when and whether a long-term facility would become available and whether Darlington would become the site for storage of other nuclear waste.

Questions, Comments and Concerns – from Document 5

1. *Transportation*: Concern expressed about transporting DSCs off-site and their physical integrity if dropped.
2. *Long-term waste disposal*:
  - Concern that the industry has been unsuccessful in finding a long-term solution in 30 years.
  - What would be the implications of a change in ownership of the plant?
3. *Institutional Trust*: Too much control of the EA process in the hands of the Responsible Authority (CNSC), which is too close to the nuclear industry. The Department of the Environment is not sufficiently involved.
4. *EA Process*:
  - Intervener funding should be provided.
  - The long-term effects (more than 50 years) of the facility should be assessed.
  - Cumulative effects assessment should be projected forward for many decades to provide a “future state assessment” taking into account all reasonably foreseeable developments.
  - Quality of Life indicators should be developed and monitored. Guard against accepting incremental, cumulative change without managing them to our benefit.
  - Look to best practices and standards worldwide. Regulatory requirements are not always sufficient to protect the environment or human health.
  - Include implications to international agreements and obligations when assessing likely effects of the project.

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- Include effect of large resource requirements on the larger market for that resource.
5. *Security* is an issue, both from terrorist attack and from the risk of earthquakes (the latter is really an issue of the Effect of the Environment on the Project).
  6. *Emergency preparedness*:
    - Backup plans in the event of an accident should be provided and better publicized.
    - Training for emergency response personnel should be provided.

#### Questions, Comments and Concerns – from Document 6

1. *Long-term waste management*:
  - Approval of this project should not be interpreted as approval for long-term storage at this location.
  - There should also not be endless extensions and expansions of the facility as we see happening at landfill sites.
2. *Environmental effects*:
  - Was Seismicity a factor considered in evaluating this facility at this location?
  - Effects assessment should consider indirect as well as direct effects.

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## **MODIFICATIONS TO GENTILLY 2 SRWMF – MODIFICATIONS AND CONSTRUCTION OF ADDITIONAL STORAGE STRUCTURES**

FEAI # 35287

EA Start Date: November 29, 2002

Decision Date:

EA Type: Screening

### Documents Reviewed

1. Submission from Canadian Coalition for Nuclear Responsibility (May 28, 2003), In The Matter of Proposed Modifications to the Gentilly-2 Radioactive Waste Management Facility, Environmental Assessment Guidelines (Scope of Project and Assessment), One-Day Hearing, Canadian Nuclear Safety Commission, June 26, 2003
2. Environmental Assessment Guidelines (Scope of Project and Assessment), Proposed Modifications to the Gentilly-2 Radioactive Waste Management Facility, Canadian Nuclear Safety Commission, August 29, 2003
3. Letter to Rene Pageau, Member of the Board of Directors, Nuclear Waste Management Organization, October 1, 2003 RE: Concerns of Members of the Information and Discussion Panel for the draft plan *The Modification of Radioactive Storage Facilities and Refurbishment of the Gentilly-2 Nuclear Power Plant*

### Questions, Comments and Concerns – from Document 1

1. Full Environmental Assessment Review needed, with public hearings and intervener funding due to:
  - Radically altered perception of security/terrorism risks after 9/11 and given the strategic location of Gentilly-2 on the shore of one of the most important rivers in the world and the economic and symbolic significance of the St. Lawrence Seaway as a supply route for both the US and Canada; and
  - Uncertain future of nuclear power in Quebec and concern as to who would manage the wastes at Gentilly-2 if the nuclear industry closes down in Quebec.
2. These wastes remain dangerous for many thousands of years and there is no plan or timetable for removing these wastes from the shores of the St. Lawrence River in the foreseeable future. The time frame for the consideration of environmental effects should not be limited to the licence or expected lifetime of Gentilly-2 but rather the lifetime of the wastes themselves.
3. The CCNR does not have confidence in the CNSC as an agency capable of carrying out an independent and objective assessment of the environmental implications of this project. It is too closely associated with the nuclear

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industry and with the government ministry that supports and promotes nuclear power to have the fundamental credibility that is such an indispensable aspect of solid, independent assessments of environmental risks. CNSC does not have an impressive track record in the context of conducting probing, rigorous environmental assessments of nuclear projects. An independent panel with full public hearings is required to provide the necessary arm's length assessment.

4. CCNR strongly objects to the CNSC's intention to base its environmental report on research that has been delegated to Hydro-Quebec. This is a conflict of interest situation.
5. CCNR has little confidence in the CNSC's ability to conduct meaningful public consultations, particularly when these consultations are also delegated, in large measure, to Hydro-Quebec.
6. It has been a humiliating and frustrating experience for public interest groups such as CCNR to participate in the rather primitive "public consultation" processes provided by the CNSC. Typically, interveners are given five or ten minute to voice their concerns, which are then generally contradicted on the spot by representatives of the project proponent or CNSC staff, without any genuine opportunity for more extensive debate or questioning. The CNSC approval is then given, usually on the same day as such interventions are made. Such a process has all the earmarks of futility and tokenism. Intervening groups rarely have any sense that their concerns are given serious consideration.
7. The CNSC "public consultation" process is in sharp contrast to the experience of CCNR and other public interest groups when the federal government conducts full environmental assessment reviews with an independent panel and a decent public hearings process. In such a context there is a genuine opportunity to challenge the industry's figures, assumptions, and methodologies, and to force a consideration of many aspects that have hitherto not been considered by the proponent. The reports of such panels often reflect, to a greater or lesser degree, a number of concerns and considerations that have been brought forward by groups other than the proponent.
8. CCNR believes that public participation should not be reduced to a formality. The same is true for environmental assessment -- it should not be reduced to an elaborate ritual that inevitably results in approval of the project. By delegating significant portions of both the environmental assessment and the public consultation process to Hydro-Quebec, CNSC runs the risk of emasculating and invalidating both.

#### Questions, Comments and Concerns – from Document 3

1. Why couldn't used nuclear reactor fuel, considered to be waste, be recycled in Canada?

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2. Among the options for long-term nuclear waste management under study, one of the ones mentioned in NWMO publications raised particular concern – long-term management at nuclear sites like the Gentilly-2 nuclear generating station.

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## **MODIFICATIONS TO POINT LEPREAU SRWMF**

FEAI # 27931

EA Start Date: April 3, 2001

Decision Date:

EA Type: Screening

### Documents Reviewed

1. Union of New Brunswick Indians, A Review of the Point Lepreau Solid Radioactive Waste management Facility Modifications Environmental Assessment Study Report, May 30, 2003
2. Report to New Brunswick Power On Point Lepreau Solid Radioactive Waste Management Facility Modifications Environmental Assessment Study Report, Jacques Whitford Environment Limited, February 2003
3. Commission Member Document 03-H24, Proposed Modifications to the Point Lepreau Solid Radioactive Waste Management Facility, June 27, 2003
4. Point Lepreau Solid Radioactive Waste Management Facility Modifications Environmental Assessment Study Report, Prepared for NB Power by Jacques Whitford Environment Limited, May 2003

### Questions, Comments and Concerns – from Document 1

1. No other peoples or governments in the province have Treaty or Aboriginal rights and this makes us much more than just a stakeholder. We not only have an interest; we have an ownership, a possessor's right, an overriding right to our land and its resources which makes us much more than just another stakeholder and our rights or interests take precedence over the rights of all others who may be designated as stakeholders.
2. The UNBI is concerned that the proposed total Point Lepreau development including the SRWMF will have adverse impacts on our Aboriginal and treaty rights, significant sites such as ancient portages, villages and meeting places, deer wintering grounds, areas used for collecting traditional plants for edible and medicinal purposes and areas used for harvesting wood products and fishing.
3. In addition, there are other developments such as the international power line and international natural gas pipeline in the vicinity. The cumulative impact of developments such as these has not been analyzed and this is critical to the future of animal wintering sites.
4. In addition, the Chiefs of the UNBI First Nations are concerned about cultural and social impacts caused by construction which will disturb burial sites, Aboriginal artifacts, portages, encampments, medicinal plants and trees used for traditional basket making, our trapping, fishing and hunting grounds.
5. One of the key problems that First Nations have with the existing consultation

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process is the fact that it is so nebulous (good faith consultations is not defined) that proponents get away with claiming that they have consulted merely by meeting with Aboriginal people, groups or First nations without having had meaningful discussions.

6. The biggest problem to carrying out good faith consultations is the lack of financial resources.
7. There needs to be adequate and full finances provided to enable First Nations to conduct a proper analysis of the project and even to visit the site of a project.
8. Once approval has been given the proponents they ignore commitments they have made to get the approval and feel no need to continue any consultations or process to keep our people informed of what is happening. We have no resources of our own to continue monitoring and ensure that there is compliance.
9. The Assessment report failed to address:
  - First Nations Treaty and Aboriginal Rights;
  - First-hand environmental, social, cultural, ethical and spiritual views and Alternate First Nations environmental assessment regimes, which would require native participation in the process.
10. The EA and consultation process are flawed because they did not:
  - Adopt consultation and study techniques from recent assessment processes involving aboriginal peoples;
  - Enable First Nations peoples to determine the methodology of necessary consultations;
  - Fund First Nations to undertake studies in conjunction with their regional organizations (UNBI) and in collaboration with recognized experts and independent advisors of their choice;
  - Permit adequate time to review documents before meetings; and
  - Permit adequate time for meaningful consultations to be undertaken.
11. Recommendations:
  - Ensure that First Nations have adequate resources (financial, human, technical and time) to fulfill their responsibilities under the Environmental Assessment Act. (Perhaps some reasonable share of the total assessment cost).
  - Ensure that proper guidelines are jointly developed by the CNSC, NBP, and the First Nations and are put in place to ensure that proponents of major projects such as NBP adequately assess concerns of First Nations peoples.

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- Ensure that First Nations have meaningful and continuous involvement in the assessment process from the planning stage to final monitoring.
  - Allow for alternate First Nations environmental assessment regimes using “traditional knowledge”.
  - Ensure that First Nations peoples receive a share of the economic benefits from each project (jobs, construction contracts, etc.).
  - NBP should consider establishing and funding, with assistance from both governments, a permanent Environmental Review Committee within UNBI. This committee would work with NBP on all its environmental reviews and undertake joint research on First Nations projects (archaeology, habitat, etc.).
  - NBP, the Province and the Federal Government should consider jointly working with UNBI to establish appropriate training programs in the environmental sciences for First Nations youths. Emphasis could be placed on merging traditional knowledge with today’s science.
  - NBP could immediately plan to train First Nations people for jobs in monitoring, increased security etc. UNBI would also like to immediately start training with NBP for jobs in the trades in time for the Refurbishment Project.

#### Questions, Comments and Concerns – from Document 3

1. Inadequate time frame to review the Screening Report and the EASR;
2. The need for a full panel review for the project;
3. Consideration of long-term management of wastes;
4. Delegation to proponent for carrying out part of the assessment and the potential conflict of interest;
5. Technical studies should have included a health risk analysis;
6. Possible designation of radionuclides as being toxic under CEPA; and
7. Inadequate level of consultation by the proponent with Maliseet Nation at Tobique.

#### Questions, Comments and Concerns – from Document 4

1. Summary of Issues Raised During Consultation with the Public and Representatives of the Aboriginal Community:
  - There is concern about the management of contaminated heavy water.
  - There is concern about the management of radioactive waste (spent fuel).
  - What will the impact on local Saint John economy?

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- There is concern about the waste management and spent fuel areas encroaching on the scenic view.
  - What happens to the onsite workforce during refurbishment and how many people will be added to the workforce during the refurbishment?
  - Do any radioactive wastes leave the site?
  - What are the quality assurance requirements?
  - What will this do to our emissions?
  - Is it earthquake proof – how can it be?
  - What are the effects of PLGS operations on salmon, and in particular the effects of the tritium plume and possible uptake into the food chain?
  - There is concern about traffic during the outage.

2. Other Key Issues:

- Comprehensiveness of the EA and inclusion of the nuclear generating station refurbishment;
- Requirement for a full panel review;
- Consideration of long-term management of wastes;
- Delegation to proponent for carrying out part of the assessment and the potential for conflict of interest;
- Potential for impact on Aboriginal health, treaty rights and traditional ecological knowledge;
- The need for the EA to address the potential worst-case environmental effects of natural hazards; and
- Proposed security measures to be implemented.

3. General Issues:

- There is uncertainty about NBP being sold/privatized and the potential impact.
- What is the effect of tritium on vegetation and on people living in the area and do standards for limits consider that children are more susceptible than adults?
- Are you using local companies for this project?
- How safe is the storage area if a plane crashes into it?
- Is there waste coming from the U.S. to Canada?
- What would happen if one of the canisters were damaged in any way?
- Are you ever going to ship the waste off site?

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## **BRUCE RADIOACTIVE WASTE OPERATIONS SITE 2 FOR ADDITIONAL STORAGE OF LOW AND INTERMEDIATE LEVEL WASTE**

FEAI # 19002

EA Start Date: February 24, 2000

Decision Date: May 30, 2001

EA Type: Screening

### Documents Reviewed

1. Bruce Radioactive Waste Operations Site 2 for Additional Storage of Low and Intermediate Level Waste, Environmental Assessment Report, Ontario Power Generation, September 2000
2. Bruce Radioactive Waste Operations Site 2 for Additional Storage of Low and Intermediate Level Waste, Environmental Assessment Report Addendum, Ontario Power Generation, March 2001
3. Environmental Assessment Screening Report for the Additional Storage Project at Radioactive Waste Site Operations 2, Canadian Nuclear Safety Commission, April 2001

### Questions, Comments and Concerns – from Document 1

Note: This document did not provide categories for comments, but like comments have been grouped together with less spacing between.

1. What will be the impact on employment?
2. Will there be any work for local contractors?
3. Can the containers be manufactured locally?
4. Why do we need another Low Level Storage Building (LLSB) when we are building a new incinerator?
5. Will waste continue to come from Darlington and Pickering?
6. If the Bruce site is sold, what will be the impact on the waste site?
7. Is the waste site part of the sale?
8. Concerns over the waste being in private hands.
9. Concern about the future of Bruce A.
10. Is there a chance that waste will come from the new company from some of their other sites?
11. Concern about protecting groundwater.
12. How big will the RWOS2 site get?
13. Concern that the storage facilities may be expanded in the future.

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14. How long will a LLSB last?
  15. How long will the liner last?
  16. Will the containers last 50 years? What happens after that?
  17. Concern that there is no long-term waste disposal facility already in place.
  18. Concern about high and intermediate level waste disposal (particularly spent fuel rods).
  19. Concern about the frequency of monitoring (radiation, groundwater, surface waters, air, vegetation).
  20. Concern about monitoring air quality, including radiation coming from the LLSBs.
  21. Recommendation that more public information sessions be held to educate the public on nuclear waste management at BNPD. The public information should be both in the local community, and across Southern Ontario (where wastes are transported).
  22. Concern about contaminated runoff and the resulting effects on Lake Huron and groundwater.
  23. Concern about impacts on fish and wildlife.
  24. Concern about contamination of the food chain.
  25. Concern about the effects on the spring-fed creek at the rear of the facility, which drains into Lake Huron.
  26. Concern about the impacts on hatcheries and the Lake Huron fishery.
  27. Concerns about air quality due to emissions from the incinerator (particularly dioxins).
  28. Concerns about the likelihood of natural disasters (e.g., earthquakes) and human induced errors (e.g., fire).
  29. Concern about the likelihood of spills.
  30. Concerns about impacts from the actual construction of the additional storage facilities (including modification of terrain, and impacted runoff).
  31. Concerns about problems with water condensation in the ICs.
  32. Concern about Carbon-14 levels.
  33. Concern about levels of Tritium in groundwater.
  34. Concern about building additional LLSBs of the same design when there may be problems with the existing LLSBs.
  35. Recommendation that Ontario Power Generation consider alternatives to nuclear power generation.

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36. Concern about impacts on cancer levels in the local community.
  37. Concern about health impacts on the population, particularly children.
  38. Concern about the impacts on camping activities at Inverhuron Provincial Park, e.g., swimming and fishing.
  39. Concern about increasing truck traffic (number of trucks and frequency of trips).
  40. Concern about damage to roads from transporting additional waste.
  41. Is there potential to upgrade the design and carrying capacity of the roads being used to transport the waste?
  42. Concerns about transporting wastes through the community. Is spent fuel being transported?
  43. Concern about transportation and storage security.
  44. Concern about public perception. Will it adversely affect the choice of retirees to come to the community? Poor performance could impact on property values.
  45. It is important that the site continues to be operated as a “world class” facility.
  46. How long will the waste remain radioactive?
  47. Are our children inheriting our waste?
  48. The community does not want to be just a dumping ground for radioactive waste. There needs to be a balance between the hazards of accepting waste at the site and benefits for the community, e.g., jobs.
  49. Concern about the loss of jobs at BNPD.
  50. Will there be sufficient technical and financial resources in the future to manage the wastes?
  51. How is the expansion being financed?
  52. Is it sustainable to continue to receive wastes at the site?
  53. It is imperative that a way is found to store irradiated waste or the plant will have to be shut down.

#### Questions, Comments and Concerns – from Document 2

1. As a general comment we want to register a strong protest about the short public comment period provided for this RWOS 2 Additional Storage Project. A non-profit organization does have a need to consult with experts who are not always available on short notice.
2. It is high time that the industry and the Commission realize that this outdated, unsafe and inefficient technology has to come to a timely end. Producing

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waste that cannot be handled, stored and even disposed of safely has to stop.

3. Figure 3-10 revised defines the ultimate RWOS 2 boundaries, which provide for the potential to expand the current boundaries by some 250%, which could result in the creation of perhaps one of the world's largest radioactive storage sites.
4. We take strong exception to the arguments put forward in 6.6 Radiation Environment (Carbon-14 Effects on Terrestrial Biota). There is no way, even with mitigation measures to prevent emissions from increasing or stop C-14 from going beyond the BNPD site boundary.
5. Anticipation of severe weather related events don't seem to rate high in the OPG EA Report.
6. Who determines what defines "negligible". There is a strong trend in the EA to dismiss any cumulative effects that sometimes border on the ridiculous?
7. Will there be an increase in fire fighting equipment and availability with an expanded storage facility now intended to handle highly combustible radioactive waste oil?

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## PICKERING A RETURN TO SERVICE

FEAI # 18822

EA Start Date: July 30, 1999

Decision Date: February 16, 2001

EA Type: Screening

### Documents Reviewed

1. Pickering A – Return to Service, Environmental Assessment, Main Report, Volume 1, Ontario Power Generation, April 2000
2. Pickering A – Return to Service, Environmental Assessment, Volume 2, Appendices, Ontario Power Generation, April 2000
3. Pickering A – Return to Service, Environmental Assessment, Technical Support Document, Community and Stakeholder Consultation, Ontario Power Generation, April 2000
4. Pickering A – Return to Service, Environmental Assessment, Annex Report, Issues from Pickering Environmental Review, Ontario Power Generation, April 2000
5. Pickering A – Return to Service, Environmental Assessment, Technical Support Document, Socio-Economic Conditions, Ontario Power Generation, April 2000
6. Commission Member Document, Pickering A – Return to Service, September 5, 2000

### Questions, Comments and Concerns – from Document 3

#### *1. Health and Safety:*

- Is there any safe level for the release and spills of radioactive materials to lake water?
- What is the probability of an accident?
- Have there been past spills/accidents? What was the impact?
- There should be no shortcuts of economy over safety, especially with privatization?

#### *2. Human Health:*

- Are there studies on health problems for people living near nuclear facilities, PNGS? What do they show?
- What is the relationship between emissions and public health?
- What information is there on the incidence of cancer, birth defects and asthma near nuclear facilities?

- We need to monitor the health of residents near PNGS.

### 3. *Environmental Contamination:*

- Concern about drinking water quality due to emissions and leaks of non-radioactive contaminants into the lake.

### 4. *Age of Facility/Operating Life:*

- There are concerns about the safety of old nuclear reactors.
- Is PNGS-A worth refurbishing?
- What is the life expectancy for safely operating nuclear reactors?

### 5. *Emergency Response:*

- What pill is there for radiation sickness? Who provides it?
- How is emergency preparedness handled in the EA?
- The EA should assess emergency planning compliance.
- How will panic and traffic be handled in an evacuation?

### 6. *The EA Process:*

- The time frame is too short for effective public input – too much information to review in a short period of time.
- The screening track is insufficient. We want public hearings by independent impartial panel.
- Why do we need to return PNGS-A to service? The EA should consider alternatives to returning PNGS-A to service.

### 7. *Public Consultation:*

- Establish benchmarks to determine if you have fully informed the community and stakeholders.
- How is the effectiveness of outreach measured?
- Avoid abbreviations and acronyms.

### 8. *Socio-Economic Issues:*

- How many new and reallocated jobs will be created?
- Will property values be affected?
- Will there be insurance for property losses in case of an accident?

### 9. *Communications:*

- Communications with the public on incidents/accidents is slow and “secretive” with some denial.
- When OPG says “minor leak”, people need information to judge how

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minor.

10. Cost of EA/Upgrades:

- What is the cost of the EA?
- Is it cost-effective to return PNGS-A to service?
- What is the cost of the PNGS-A upgrade?

Questions, Comments and Concerns – from Document 6

1. A general concern expressed by some non-government stakeholders that there is not sufficient information to make reasonable predictions about the overall likelihood and significance of effects. Those stakeholders have expressed concerns about what they view as wide gaps in critical information that preclude reasonable assessment conclusions.
2. Some public participants also criticized the EA process for not recognizing the effects of perceived risk in the general population and the resulting feelings of dread, stress and insecurity that can affect health and quality of life in the community.
3. At both the scope stage, and following the public review of the draft EA report, CNSC staff received requests from the public to refer the project to the Minister of the Environment for a referral to an independent review panel.

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## RESTART OF BRUCE A, UNITS 3 & 4

FEAI # 29271

EA Start Date: September 11, 2001

Decision Date: January 6, 2003

EA Type: Screening

### Documents Reviewed

1. Environmental Assessment Study Report, Volume 1, Main Report
2. Volume 2, Appendix B.2a, Open House Report, July and September, 2001
3. Volume 2, Appendix B.2b, Open House Report, November 2001
4. Volume 2, Appendix B.2c, Open House Report, April 2002
5. Volume 2, Appendix B.9, Workshop Report, November 17, 2001
6. Appendix D, Public Attitude Research

Questions, comments and concerns identified in Documents 1 through 5 are overlapping and complementary and are therefore reported collectively here.

#### 1. *Nuclear Waste Disposal:*

- Some people expressed concern that the restart of Bruce A would contribute to the character of the area as a nuclear zone, and thereby encourage authorities to consider this facility as a site for nuclear waste disposal in future.

#### 2. *Environmental Effects:*

- Does the assessment consider the state of the environment before the nuclear facility was built? There is a desire on the part of some to “undo” the effects of existing nuclear facilities and to return the site to its pre-nuclear state.
- Be sure to consider the downwind effects of atmospheric releases.
- Potential for and effects of spills of conventional, non-radioactive contaminants into watercourses need to be considered.
- The socio-economic effects on tourism, recreational resources, policing, regional economic development, labour market shifts and public attitudes need to be assessed.

#### 3. *Health and Safety:*

- Effects on human health are paramount, N.B. tritium levels in drinking water, cumulative effects on fish and game and related effects of human consumption, tritium in air and atmospheric deposition on water bodies.

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- Need to assess cumulative effects on human health of all nearby nuclear facilities, i.e. cumulative dose exposures.
  - Effects of radiation exposures to workers and nearby residents should be assessed.
  - Effects on farm produce and livestock could affect human health.
  - Need to ensure a local emergency response capability, and to explain it to the public in the affected communities

4. *EA Process and Institutional Trust:*

- The Scope of Assessment is too narrow.
- The information presented is biased.
- Do not have confidence in the CNSC in light of previous rulings.

5. *Community Relations / Public Consultation:*

- There needs to be ongoing monitoring, reporting and operational transparency to the community; there is a concern about lack of openness around reporting of spill incidents.

6. *Security and Terrorism:*

- How have you prepared for a terrorist attack in light of 9/11?

Questions, Comments and Concerns – from Document 6

7. *Public Attitudes:*

- Only 5% of respondents claim the nuclear stations affect their sense of health, safety and personal security.
- Less than 2% cite the stations as an important issue for the community, a distinctive feature of the area's character, or as an aspect they like least about the community.
- 95% are either 'very' or 'somewhat' satisfied with living in Bruce County.
- 21% think about the stations 'often' (12%) or 'very often' (9%).

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## **DECOMMISSIONING OF AECL'S WHITESHELL LABORATORIES**

FEAI # 18737

EA Start Date: June 2, 1999

Decision Date: April 2, 2002

EA Type: Comprehensive

### Documents Reviewed

1. Draft Comprehensive Study Report, Whiteshell Laboratories Decommissioning Project, Volume 1: Main Report, Volume 2: Appendices, AECL, March 2001.
2. Comprehensive Study Report, Whiteshell Laboratories Decommissioning Project, Volume 3: Addendum, AECL, November 2001.

### Questions, Comments and Concerns – from Document 1

#### *1. Time Frame:*

- The Whiteshell site must be fully decommissioned in less than 20 years and not defer costs to future generations.
- The 60-year timeframe for decommissioning is unacceptable to communities.
- The average person doesn't understand why a long time frame is contemplated and the argument needs to be made in terms that they understand.
- There are a number of outstanding public issues, the principal one being AECL's intention to close up the site and not do any real decommissioning and decontamination until decades in the future.
- Very little needs to be postponed for safety reasons.
- AECL has also ignored the additional risk of leaving the radioactive materials in their present location for long periods.
- We expect AECL to fully decommission the site in a continuous process in less than 20 years. A project with a 60-year completion date can never be guaranteed.
- AECL's strategy of deferring decommissioning is out of step with practices and safety considerations applied in other OECD countries.
- The morality of deferring the immense costs of decommissioning the Whiteshell site to our grandchildren who had no benefit of AECL's existence is reprehensible.
- The integrity of concrete canisters over the long term is questioned, as is the potential for radioactivity leaking out of the canisters.

#### *2. Environmental Effects:*

- Potential contamination of the environment in general during decommissioning and over the longer term;
- Downstream water quality; and
- Surface water contamination.

*3. Terrestrial Biota/Wildlife Effects:*

- Potential impacts of decommissioning activities on wildlife;
- Potential for increased contamination during removal of waste from bunkers and tile holes in Phases 1 and 3; and
- Potential for disturbance of wildlife, increased contamination and destruction of habitat during Phases 2 and 3 remediation of contaminated lands.

*4. Land/Resource Use:*

- Potential for increased contamination and sediment load during Phase 3 removal of active drain liners.

*5. Aquatic Biota/Fish Effects:*

- Potential for increased contamination and sediment load during Phase 3 removal of active drain liners; and
- Potential for increased contamination, sediment load and habitat destruction during Phase 1 and 3 removal of river sediment.

*6. Health and Safety:*

- Some members of the community lack confidence in future safety measures.
- There are concerns about a loss of hands-on knowledge is a risk to future worker and community safety.
- Will there be adequate fire fighting services?
- Potential health effects from decommissioning?
- The plan is clearly at odds with basic safety principles applied in other countries.

*7. Environmental Monitoring:*

- There should be local input to the design of monitoring program.
- Regular reporting of information to neighboring communities would help alleviate concerns.
- The fact that there is off-site monitoring would imply that there are releases of concern to the environment.
- Independent monitoring would give people more confidence.

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#### 8. External Events:

- Significant external events like forest fires could impact on security.
- There is a need to undertake a probabilistic risk assessment of external events.
- What would be the effect of flooding of the Winnipeg River on stored waste materials?

#### 9. Security:

- There is a need for 24-hour monitoring of the Waste Management Area.
- There is a perception that AECL is abandoning the site and leaving it to a security company with low-paid employees.

#### 10. Future Staffing Requirements:

- The loss of technical resources in region will impact on future availability of qualified staff.
- Loss of corporate memory is reducing peoples' confidence in ability of future staff to manage problems.
- Will training be adequate for staff and what will their qualification requirements be?
- When decommissioning, using personnel familiar with the operations of a facility and the location and nature of the contamination poses less risk to employees.
- To leave a site virtually unattended without the necessary staff to provide full protection is unprecedented. The CSR does not give an indication of the structure and competence of the caretaker operation.
- AECL must maintain their own fully trained fire protection staff as long as there are contaminated facilities on site.
- Start immediately to fully decommission the Whiteshell site in a continuous way according to the 25-year time frame. This would allow full advantage to be taken of local knowledge and provide continuous employment for a decommissioning team and a level of economic activity that would go some way to alleviating the impact of the withdrawal of AECL's R&D activities.
- An intermittent decommissioning process will have huge problems in assembling resources each time there is an incremental activity.

#### 11. Site Characteristics:

- Does AECL know everything about the site?
- There is a perception that records on where materials are stored at the WMA are not good.

- There is a lack of detail as to the nature of the contamination in the facilities and the quantities and location of the various waste forms.
- AECL is controlling the access to information about the condition of the facilities and the quantities, types and disposition of radionuclides, making it impossible to undertake independent safety assessments.

*12. Long-Term Communications:*

- Ongoing communications to provide information on the decommissioning program are needed.
- There is a need to inform and involve the community in a communications plan during the decommissioning years (i.e. role in monitoring, notification protocol for work in progress, accidental releases into the environment, etc.).

*13. Financial Assurances:*

- Will AECL be able to acquire the necessary resources for decommissioning?
- What guarantees are there that resources will be available for long-term monitoring?
- What assurances do the public have that AECL won't take shortcuts?
- Whatever decommissioning plan is finally accepted, there must be guaranteed funding in place to carry it out.
- Stop passing the buck on financial liability. All future commitments for decommissioning should be presented and guaranteed jointly by AECL and the federal government.
- Once a decommissioning plan is accepted and approved, firm financial guarantees from the federal government must be put in place, with penalties for missing major targets.

*14. Planning Considerations:*

- The decommissioning plan is clearly driven by fiscal not safety, economic or public morality considerations.

*15. Acceptability of Plan:*

- AECL's concept of community consultation is to ignore them and move on with their plan as originally conceived.

*16. Main concerns revolve around:*

- Time frame to decommission and associated issues related to overall site management, staffing and security requirements;
- Health and safety;
- Environmental protection;

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- Containment of waste;
  - Long-term involvement of local communities; and
  - Financial and human resource assurances.

17. *First Nations:*

- Flora an Fauna:
  - Address impacts from historical activities as well as proposed decommissioning; and
  - Include migratory species and wildlife that moves in and out of Waste Management area.
- Waste Management Area Risks:
  - How will accidental releases be controlled, mitigated and monitored?
  - How will intentional intrusion be mitigated?
  - A risk assessment report is needed for the WMA to quantify risks to the environment and human health from material stored in the WMA and for material ultimately slated for disposal in the WMA.
  - Airborne effects.
- Sediment and Water Quality:
  - What were conditions prior to Whiteshell operations and what have the nature and extent of impacts been?
  - There is concern about contaminated sediment and water downstream of Whiteshell and impact on fish and potential impact from decommissioning.
  - There is concern about impacts on surface and ground water.
- Accidents:
  - There is concern about potential accidents during decommissioning process and potential impacts on human health and land/water resources. What safeguards will be implemented and contingency plans in case of an accident?
  - A communication program is needed to notify First nations communities in the event of an accident.
- Reporting:
  - Decommissioning status reports need to be prepared for each phase and placed in public registry.
- Involvement in Monitoring:
  - First Nations want involvement in development of a long-term

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monitoring program and First Nations people trained and employed in the collection of monitoring data. First Nations want to partner with AECL in the monitoring of resources within the regional study area.

*18. Information Disclosure:*

- Future trust and assurances are more difficult because of past lack of information disclosure.
- Open, honest discussion with full disclosure of information on decommissioning program will enhance credibility and trust.

*19. Community Image:*

- The community is concerned that it will be viewed as nuclear waste site.

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## **CHALK RIVER LABORATORIES WASTE TREATMENT CENTRE UPGRADE PROJECT TO PROVIDE FOR A FIVE-FOLD INCREASE IN TREATMENT CAPACITY FOR LOW LEVEL RADIOACTIVE LIQUID WASTE**

FEAI # 12495

EA Start Date: October 2, 1997

Decision Date: August 5, 1998

EA Type: Comprehensive

### Documents Reviewed

1. Comprehensive Study of the Waste Treatment Centre Upgrades Project, AECL, April 1998

### Questions, Comments and Concerns – from Document 1

1. Amount of solid waste and long-term plans for disposition of waste.
2. Removal of tritium before release to river.
3. Release of contaminants to Ottawa River and effect on water quality and recreational activities. Would there be compensation for downstream municipalities if there were a serious leak?
4. Leaching from dispersal pits.
5. Effects on fish in the river.
6. Waste being brought in from outside CRL. Will the area become a dumpsite for all of North America's LLRW?
7. Transportation accidents involving radioactive cargo.
8. How will the Upgraded WTC deal with radioactive nuclides?
9. Concern with proposals to dispose of LLRW in underground facilities.
10. Cost, additional employment opportunities.
11. Monitoring on and off site.
12. Plans for remediation of the site.

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## **CHALK RIVER LABORATORIES RE-OPENING OF WASTE MANAGEMENT AREA "G"**

FEAI # 17283

EA Start Date: July 16, 1998

Decision Date: July 6, 2000

EA Type: Screening

### Documents Reviewed

1. Environmental Screening Report for the Re-opening of Waste Management Area "G" at CRL, AECL, October 1999.

### Questions, Comments and Concerns – from Document 1

1. What is the composition of the wastes?
2. What is the anticipated volume, annually and in total?
3. What is the capacity of the additional canisters?
4. What is the anticipated lifespan of the concrete canisters?
5. What is the plan for eventual decommissioning for these canisters and relocation of the radioactive wastes stored in them to alternate facilities? What financial assurances are in place?
6. Relationship of site to Ottawa River?
7. What provisions have been made for these above ground storage canisters in the event of an earthquake?
8. What provisions have been made if a natural disaster should occur with days of torrential rains and the Hydro dam at Rolphton breaks with a wall of water flooding down taking these storage tanks with them?
9. What happens to the radioactive waste when the cement in these canisters deteriorates?
10. Is this for radioactive waste from other parts of the world?
11. What happens to the monitoring of these canisters if the Government decides to reduce funding?
12. Who is going to pay for this - the public or the companies selling and distributing medical isotopes?
13. Concerned about increased cancer.
14. Despite every precaution, nuclear and chemical poisons may be responsible for such environmental degradation – mutant fish.

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**CONSTRUCTION AND OPERATION OF WASTE SORTING AND HANDLING  
AND WASTE MANAGEMENT AREA “H” FOR ABOVE GROUND AND BULK  
STORAGE FOR LOW LEVEL RADIOACTIVE WASTE AT CHALK RIVER  
LABORATORIES**

FEAI # 17289

EA Start Date: January 12, 1999

Decision Date: November 1, 1999

EA Type: Screening

Documents Reviewed

1. Environmental Assessment Screening Report for the Modular Above Ground Storage Project at CRL, AECL, November 1999.

Questions, Comments and Concerns – from Document 1

1. Chalk River Laboratories (CRL) becoming nuclear dump of Canada.
2. Permanent storage solution must be found.
3. Pleased to see AECL moving to above ground storage where wastes can be seen and monitored.
4. It's in the ground now. Why dig it up? There is very little chance for this stuff to contaminate any one if it is underground.
5. Why does AECL continue to spend money on improving its storage methods when it should really be spending money on disposing of these wastes?
6. Is the level of radioactivity affected when materials are compacted?
7. I am concerned that given the elevated rates of cancer in this area, that there are effects from what you are doing up there.
8. Are there wastes coming in from other places, from OH, other places in Canada, other countries?
9. The wind blows in this direction and the water flows in this direction, from your facility, so we get all the bad stuff, but there are no jobs for Shawville people at CRL. We don't get any thing out of it. That is our real concern.

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## **CONSTRUCTION AND OPERATION OF ITER FACILITY**

FEAI # 27068

EA Start Date: April 4, 2001

Decision Date:

EA Type: Screening

### Documents Reviewed

A request was made to Iter Canada for documentation of issues raised by the public to date. Iter responded by providing an edited version of a presentation to its Environmental Advisory Council that included a summary of issues raised by the public in the course of the development of the Scope of Assessment and in a series of subsequent public information meetings held by Iter. If Canada is selected as the site for the Iter project, a more comprehensive Public Information and Consultation Program will be launched. Following are the public comments and concerns identified to date by Iter Canada:

#### *2. EA Process:*

- There should be a Panel Review to assure that interveners are heard and to provide funding to interveners for their own technical studies.
- Concerns raised about proponent doing Technical Study

#### *3. Environmental Effects:*

- Need to disclose all information on decommissioning and on plans for used components.
- What can the site be converted to after experiments completed?
- How much dust will be created during Iter construction?
- What will be the impacts on infrastructure? Roads, schools, etc?
- What accidents can occur?
- What releases will there be to the lake?
- Where will the water come from and go to?

#### *4. Safety and Security:*

- Need to assess impact on safeguards given the large accessible tritium supply;
- There should be an assessment of simultaneous accidents (e.g. terrorist attacks or seismic activity), i.e. cumulative effects assessment of natural or man-made disaster, considering all the nuclear facilities in the area.
- Concern about claims of safety given that Iter size Tokamak never built before (i.e. proven technology concern).

#### *5. Financial:*

- What if something happens to the decommissioning fund?

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## **JOINT FEDERAL-PROVINCIAL PANEL ON URANIUM MINING DEVELOPMENTS IN NORTHERN SASKATCHEWAN**

FEAI #

EA Start Date: August 1991

Decision Date: November 1997

EA Type: Panel

### Documents Reviewed

1. Report of the Joint Federal-Provincial Panel on Uranium Mining Developments in Northern Saskatchewan, Midwest, Cigar Lake and Cumulative Observation Panel Reports, Executive Summaries, November 1997
2. Report of the Joint Federal-Provincial Panel on Uranium Mining Developments in Northern Saskatchewan, Cumulative Observations, November 1997
3. Report of the Joint Federal-Provincial Panel on Uranium Mining Developments in Northern Saskatchewan, McArthur River Project, Executive Summary. February 1997
4. Report of the Joint Federal-Provincial Panel on Uranium Mining Developments in Northern Saskatchewan, Cigar Lake Uranium Mine Project, November 1997
5. Report of the Joint Federal-Provincial Panel on Uranium Mining Developments in Northern Saskatchewan, Midwest Uranium Mine Project, November 1997
6. Report of the Joint Federal-Provincial Panel on Uranium Mining Developments in Northern Saskatchewan, McArthur River Underground Exploration Program, January 1993
7. Report of the Joint Federal-Provincial Panel on Uranium Mining Developments in Northern Saskatchewan, McArthur River Project, February 1997

### Questions, Comments and Concerns – from Document 2

#### *Cumulative Observations*

1. Education is a key component. Without a continuation of initiatives such as the Multi-Party Training Plan, northerners will not be able to share in the opportunities offered by the uranium mining industry.
2. Employment and business opportunities must be made available to northerners. This is most effectively accomplished by including appropriate objectives in the Human Resources Agreements that are attached to the surface leases for the mines.

3. Protection of northern communities and the people in them is as important as protection of the biota. Qualified professionals should be engaged to monitor and study the impacts of uranium mining on the quality of life in northern communities. Any detrimental impacts should be mitigated.
4. Centralized milling of the ore from several mines at one location will cause less environmental damage, in total, than milling at a series of sites near the mines. Collective milling of several ores should, therefore, be encouraged.
5. In-pit tailings disposal facilities provide better environmental protection than do aboveground facilities. We recommend, therefore, that in the future all tailings should be placed in mined-out pits.
6. All mine rock wastes that have the potential to be acid generating should be protected from oxygen exposure. This can be achieved by using them for fill when underground mines are decommissioned or by placement in mined-out pits. Underwater disposal in existing lakes should be an option that is considered only if no suitable mined-out pits are available.
7. Perpetual monitoring of decommissioned tailings management facilities and potential acid-generating waste rock depositories will be necessary. A self-sustaining fund should be designated for the cost of monitoring and any mitigation required.
8. Cumulative effects monitoring is necessary on a regional scale to assess the potential spread of contaminants from these mines. It is important that adequate funding continues to be provided to the Cumulative Effects Monitoring Working Group (CEMWG).
9. The Environmental Quality Committees provide northerners with vehicles through which they can participate in the development of this industry. Providing northern people with a better understanding of this industry and empowering them to participate in its future developments is the best way to protect the northern environment. Governments and the industry should continue to support the EQCs.
10. The Province should complete a comprehensive study of the cumulative demands that will be placed on northern roads in the future and prepare, in cooperation with the users, to maintain them at acceptable standards.
11. Mine workers, particularly those in underground developments, depend on mine regulators to ensure safe workplaces. It is, therefore, essential that legislation and regulations provide adequate protection for both contract and non-contract workers; that mine sites be inspected frequently; and that due care be exercised to ensure that safe work practices are being followed.
12. Throughout the public hearing process, one of the overwhelming public concerns has been that uranium mining might pollute the water and biota around the mine sites irreversibly. People are not reassured by risk analyses and modeling predicting that their fears are groundless; they demand that the mining companies prove that contaminants are being successfully contained

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and not damaging the surrounding ecosystems. This can only be achieved with monitoring programs that are carefully designed and implemented with the involvement of local people.

In response to a 1993 panel recommendation, Saskatchewan Environment and Resource Management and the Atomic Energy Control Board developed a cumulative effects monitoring program in 1994 to examine the regional impacts of uranium mining on the environment. We are encouraged by this initiative and note their establishment of a Cumulative Effects Monitoring Working Group (CEMWG), including a wide range of expert opinion, and subsequent involvement of local residents in helping to sample some of the biota. We would encourage further attempts to give northerners a sense of partnership in the monitoring program and its results.

### 13. The Environmental Assessment Review Process

This panel received its mandate jointly from the federal and provincial governments in 1991 and has conducted independent public environmental assessment reviews of seven different uranium mining proposals. In conducting the public reviews, certain precedents occurred which merit comment.

This review was the first environmental assessment review undertaken jointly by the Governments of Canada and Saskatchewan. By using one process to address the legislative and regulatory needs of both governments, it was possible to eliminate duplication and reduce the costs and time required.

The mandate given the panel was the first to include the consideration of the regional cumulative impacts resulting from development of several projects within the same timeframe and geographic area. The panel reviewed the mining of nine ore bodies, the construction of one mill, the design of two tailings management facilities and the expansion of associated transportation infrastructure. Because the review period was lengthy, panel members were able to acquire a comprehensive knowledge of the technical aspects of the proposals, while at the same time assimilating the economic and social climate of the region for which the developments are proposed. This is significant; no development occurs in isolation, either from the physical environment or from socio-economic conditions. By reviewing several projects under a single mandate, it was possible to consider the cumulative environmental and socio-economic impacts of all of the proposed developments.

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Another advantage of consolidating seven proposals under one review process was that it allowed for the investigation of options to reduce the overall impact of the developments by combining some aspects of their operations. A good example of this is the decision to custom mill ores from several mines at a few sites, thus reducing the number of mills and tailings management facilities to be built and decommissioned.

The fact that this review panel was convened for more than six years did present some difficulties. The logistical problem of maintaining the involvement of panel members for the duration became apparent when two of the panel members resigned before all of the reviews had been completed. For all members, panel responsibilities were an addition to their primary employment, and the demands on their time were often difficult, or impossible, to reconcile. This would likely be a consideration for any future panel with multiple reviews in its mandate.

Another significant problem relates to the fact that the environmental assessment process, designed as a planning tool, reviews the concept of any proposed developments to enable decisions to be made before irrevocable actions are taken. For a conceptual review, the proponent must choose a point in time at which sufficient information is available to prepare an environmental impact statement and must base its predictions on the amount of information available at that time. This confers a static nature on the environmental assessment process. This is particularly difficult to reconcile when an EIS for one proposal is based on information common to another, previously approved, project that is generating site-specific information for licensing approvals. This was the case in the Midwest and Cigar Lake reviews: The static nature of the environmental assessment of their tailings management facility proposal was in conflict with the dynamic nature of the licensing process ongoing for the same facility, the JEB TMF. In the future, if similar reviews are undertaken, careful consideration must be given to coping with the possible interaction of conceptual information from one proposal and site-specific data from another.

Throughout this review, the panel and secretariat heard a certain amount of criticism regarding the public environmental assessment review process. Some of the concerns related to the duration of the reviews; to the amount of time permitted for the public to assess the complex technical details of the proposals; and to the scope of the panel's mandate. As with any legislated process, environmental assessment tries to respond to the varied interests of all participants, while achieving its objectives. We are comfortable with the balance achieved by the processes of the Governments of Canada and Saskatchewan and suggest, in response to the criticisms heard, that careful consideration be given to what alternatives might be instituted if the process were to be changed.

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Questions, Comments and Concerns – from Document 4

*Cigar Lake Uranium Mine Project*

Developments, even if located in the sparsely populated northern regions of our country, do not occur in isolation. People, as well as the environment, are affected by the opening of a new mine such as the one proposed at Cigar Lake. Our philosophy in completing this review has, therefore, been to assess as thoroughly as possible the impacts of the project on northern people, as well as on the northern environment. In our view, impacts on the vitality of northern communities, for example, are as significant as impacts on the biota. Both are important; both must be protected and, if possible, enhanced by the development of this project.

1. It is recommended that long-term monitoring be introduced to protect future generations from unacceptable impacts. This is particularly important if approval is eventually given for the tailings management facility. Arrangements should be made to monitor this site in perpetuity, and resources retained to mitigate any undesirable impacts. It is for this reason that we reiterate our previous recommendation for the establishment of the Uranium Mining Contingency Fund, and an authority to oversee it.
2. Local participation in the monitoring protocols is essential. The Environmental Quality Committees and the Athabasca Working Group provide good vehicles for local participation. It is recommended that their participation be enhanced by the provision of adequate financial support and, in the case of the Athabasca Working Group, by the adoption of measures that will give it a more formal, permanent status.
3. The Cigar Lake Project, if approved, will provide much-needed opportunities for some northern people to find employment and to benefit from business contracts. The EIS indicates that CLMC expects to reach an employment level of 50 per cent northerners within five years of operations start-up. This is an unacceptably low expectation in light of the funds that have been spent and the efforts that have been made to prepare northerners for employment through the Multi-Party Training Plan and other programs. We are recommending a minimum of 50 per cent northerners in the CLMC workforce from the beginning of the project with an increase in northern participation of 1 per cent per year until it reaches at least 67 per cent. We are also recommending that an objective of obtaining at least 35 per cent of all required goods and services from northern suppliers be established for the Cigar Lake Project.

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Questions, Comments and Concerns – from Document 5

*Midwest Uranium Mine Project*

1. Because it is the people living in northern Saskatchewan who will experience the greatest impacts of this and other uranium mining projects, the panel has paid particular attention to their concerns, and to ensuring that northern residents will be protected from adverse environmental impacts in the long term.
2. We are recommending that long-term monitoring be introduced to protect future generations from unacceptable impacts. It is unrealistic to expect that it might be possible in the foreseeable future to walk away from sites containing millions of tonnes of material that is both radioactive and toxic. Such sites must be monitored in perpetuity, and resources must be retained to mitigate any undesirable impacts. It is for this reason that we reiterate our previous recommendation for the establishment of the Uranium Mining Contingency Fund, and an authority to oversee it.
3. Local participation in the monitoring protocols is essential. Without local participation, distrust of the monitoring data is likely to result in a continued misunderstanding of the state of the environment. It is for this purpose that the Environmental Quality Committees were established pursuant to this panel's previous recommendation. We urge that their participation be enhanced by the provision of adequate financial support for the education and training of committee members in the various issues related to uranium mining.
4. The Midwest Project, if approved, will provide much-needed opportunities for some northern people to find employment and to benefit from business contracts. However, because the economy of northern Saskatchewan fails to redistribute wealth in the way that most other economies do, only a small fraction of northerners will benefit from these opportunities. The general population of the north will not experience a noticeable improvement in its standard of living unless some form of revenue sharing is introduced.

Questions, Comments and Concerns – from Document 6

*McArthur River Underground Exploration Project*

*1. Social Issues – Northern and First Nations – Employment and Training*

During those public hearings held in northern Saskatchewan, it was evident that employment for northern residents is an issue of great and almost universal concern. Public hearing participants most frequently asked how many jobs would be created by the underground exploration phase, and by a subsequent production phase, if one were approved. The number of available jobs; the qualifications required to fill those jobs; the training available on site; and the percentage of northerners and Native peoples expected to be included in the McArthur River staff complement were questions asked at almost every session of the public hearings.

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## 2. Business Opportunities

Other presenters were less enthusiastic about the beneficial role of uranium mining in the economy and suggested that time, money and efforts could be more productively channeled into alternative forms of economic development such as eco-tourism, commercial fisheries, forestry and the development of other renewable sources of energy.

## 3. Local Land Use

Concern was expressed to the panel during the hearings that uranium mining could have a negative impact on traditional land uses in the Athabasca Basin.

## 4. Heritage Resource Sites

One speaker raised questions regarding heritage resource sites during the public hearings. This presenter was concerned that a native burial site would be disturbed by activities at the McArthur River site.

## 5. Northern and First Nations Issues

Public hearing participants raised concerns that the uranium mining industry has disrupted traditional lifestyles. Part of the disruption was due to the incursion of mining activities onto hunting, fishing and trapping territories. The employment of northerners and Native peoples also has caused a disruption, since there has been a tendency for approximately one-third of mine wage workers to move south. Some persons employed at a mine site have found it difficult to continue their traditional lifestyle activities.

## 6. Environment – Air Quality

Most air quality concerns were related to radon emissions and focused both on the safety of employees at the exploration site and on the impact of emissions on air quality in the vicinity of the McArthur River project.

## 7. Environment – Hydrogeology

A concern which was expressed by at least one member of the public suggested that the process of exploration drilling would significantly alter the rock mass hydrogeologic conditions, making the rock mass generally more permeable to ground water flow and more likely to produce contaminant release.

## 8. Environment – Surface Waters and Fisheries

The primary concern of the public is that effluent from exploration would pollute the surface waters and that fish and other aquatic organisms would become contaminated. There is also concern that this would add to similar pollution from other mines in the region to produce a regional deterioration in water quality.

A second concern is that the characteristics of the water are such that they have low acid-buffering capacity. There are acid-generating sulphide minerals

in the basement rock in the location of the proposed exploration excavation, and leachate from such waste rock could impact the surface waters.

A third concern of the public is that baseline studies of the water, sediments, and biota are incomplete.

#### *9. Environment – Wildlife and Terrestrial Habitat*

There was concern of widespread contamination of the area including the vegetation and wildlife by radon progeny, and that the baseline information is viewed as being incomplete.

A third concern was related to the possible disruption of wildlife, in particular, woodland caribou.

#### *10. Environment – Bioaccumulation of Radionuclides and Metals*

There is a common perception and concern that radionuclides and metals can be magnified in food chains to pose a risk to humans, particularly those in the North who lead traditional ways of life on the land.

#### *11. Worker Health and Safety Radiation Risks*

The panel heard many expressions of concern regarding the potential health effects of uranium and associated exposures on the workforce; on the surrounding communities with respect to both current and future generations; and, indeed, on the planet as a whole. Some speakers suggested that more comprehensive health studies be carried out before any further uranium mines are permitted in northern Saskatchewan. While the panel recognizes that numerous committees of internationally recognized experts have studied these matters extensively, it was apparent that public familiarity with these studies and the relevant conclusions was lacking. This greatly hindered the quality of debate regarding the acceptability of radiation-related risks, the dose limits, and appropriate control measures. The panel, therefore, concludes that greater attention must be devoted to raising public awareness and scientific understanding of radiation and related issues, utilizing, as much as possible, organizations that are seen by the public to be neutral, (e.g. the Canadian institute for Radiation Safety).

#### *12. Community Health*

Comments from presenters, particularly in the northern communities, indicated that the expanded development of lands traditionally used by the residents for hunting, fishing and trapping has brought an increased level of stress. One speaker explained the belief of the Aboriginal peoples that the earth must be allowed to remain intact, that earth as the source of life and sustenance must be left undisturbed. Another mentioned the important role played by the integrity of the environment in the wellness of people. The panel recognizes that land is fundamental to aboriginal culture, and that disruption of the land must be minimized to mitigate negative social health impacts.

The panel also noted that few (if any) women in the northern communities spoke in favour of uranium mining. Concerns about the well-being of Mother Earth and future generations were particularly passionate.

The panel recognizes the important role women play in traditional northern Native society and encourages the involvement of women in decisions regarding uranium-mining development.

Public hearing participants expressed concern about a perceived increase in the number of serious illnesses, such as cancer and diabetes, and a possibility that this increase might be linked with an expansion of uranium mining activity.

### Questions, Comments and Concerns – from Document 7

#### *McArthur River Project*

1. Developments, even if located in the sparsely populated northern regions of our country, do not occur in isolation. People, as well as the environment, are affected by the opening of a new mine such as the one proposed at McArthur River. Our philosophy in completing this review has, therefore, been to assess as thoroughly as possible the impacts of the project on northern people, as well as on the northern environment. In our view, impacts on the vitality of northern communities, for example, are as significant as impacts on the biota. Both are important; both must be protected and, if possible, enhanced by the development of this project.
2. It is recommended that approval for mining, as described in the Environmental Impact Statement, be granted, subject to the following conditions:
  - The "as low as reasonably achievable" (ALARA) principle be rigorously enforced to protect workers from unnecessary radiation exposures in all stages of the project - development, operation and decommissioning;
  - Research continue into methods for reducing effluent volume and contaminant concentrations;
  - Improved monitoring of environmental impacts be required at, and downstream from, the release sites; and
  - Improved methods for distinguishing between barren and mineralized waste rock be required.
3. It is recommended that cautious approval be given to the proposal to deposit tailings from the milling of the McArthur River ore, in the Deilmann Tailings Management Facility, as described in the Environmental Impact Statement. The following conditions are attached to this recommendation:
  - Rigorous performance requirements to be part of the approval;
  - Procedures for mitigating any potential malfunctions to be identified before deposition of the McArthur River tailings begins;

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- Performance monitoring procedures for all stages of the operation of this facility to be developed and monitoring initiated before deposition of McArthur River tailings begins. If monitoring identifies that the established performance requirements are not being met, mitigation measures must be implemented; and
  - Chat conceptual plans for monitoring of the decommissioned facility in perpetuity to be developed before deposition begins.
4. It is recommended that approval be given to the construction of a haul road from McArthur River to Key Lake, subject to the following conditions:
- That environmental damage be minimized by following the power line as closely as possible; and
  - That clean mine waste rock be used as a primary road-building material.
5. It is important to recognize that this project is being developed in an area to which aboriginal people are attached historically and spiritually. We are of the opinion that northern people, because they must bear the greatest environmental risk associated with this project and because of their traditional roots in this part of Canada, deserve to share more generously than other Canadians in the benefits produced by the McArthur River Project. To assist in the achievement of this objective, the following additional conditions should be attached to the approval of this project that:
- Local people be continuously consulted throughout the duration of the project;
  - Adequate financial support be provided by provincial and federal governments for the Environmental Quality Committees;
  - Regulatory agencies support the Environmental Quality Committees actively and invite their participation in, and observation of, regulatory activities;
  - Agreements reached by the Athabasca Working Group be established as part of a legal document;
  - Cameco be required to report annually on its public involvement programs;
  - An objective of obtaining at least 35% of all required goods and services from northern suppliers be established for the McArthur River project;
  - Employment objectives for the participation of northerners in the mine and mill work force be increased from the present level (about 50%) by 1% per year until they reach at least 67%;
  - Cameco be required to report annually on the commitments it made in the Environmental Impact Statement with respect to employment and business opportunities for northerners; and

- The government agencies and departments providing services in northern Saskatchewan adopt human resources objectives that would lead to a substantial increase in northern participation on their staffs.
6. It is evident from their words and actions that northern leaders wish to have the issue of revenue sharing resolved in a political forum rather than as part of the environmental review process. We agree with that approach and urge both levels of government to become involved with northern leaders in a multipartite discussion of revenue sharing.
  7. The effects of mining on the northern environment and on the vitality of northern communities will require rigorous long-term monitoring regimes. The monitoring requirements for each component of this project must not be underestimated, either with respect to their scope or their duration. The Deilmann Tailings Management Facility, in particular, will require perpetual monitoring and arrangements should be made, prior to approval, for the monitoring of this facility in perpetuity. Approval should be granted only if the returns from the project are expected to be sufficient to bear the estimated costs of a monitoring program that is of adequate scope and duration to fully protect northern people and the environment.

#### 8. *Socio-Economic Impacts*

The environmental damage and potential social disruption caused by the McArthur River Project can be justified only if the project returns certain benefits to Canadian society. To be acceptable, resource development must bring benefits to Canadians in general and to local residents in particular.

#### 9. *Worker Health and Safety – Radiation Health Risks*

There are certain radiological protection challenges that must be addressed in the mining and milling of the high grade McArthur River ore. The mining methods (Section 6.1) have been designed specifically to prevent direct exposure of the miners to the ore.

ALARA is an important concept and it is essential that it be complied with as scrupulously as any of the regulations.

In order to better assess radiological health and safety impacts to workers, the AECB, uranium mining companies and the Government of Saskatchewan have undertaken jointly to complete a cohort mortality study of Saskatchewan uranium miners. The panel strongly endorses this epidemiological study, which will last for approximately thirty-five years.

The public voiced concern about continuing uncertainty in the assessment of radiological risks and the selection of appropriate, conservative standards for dose limits. The AECB sets public and occupational radiation dose limits, based upon recommendations of the ICRP.

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### *10. Biophysical Impacts*

A major concern of northerners is that mining activity might interfere with their traditional use of the land. They want to know that it is safe to drink the water, to fish, to trap, to hunt and to harvest plants, both now and in the future when the mines have ceased operating. To ensure that the environment is safe for these activities, an objective assessment of mining impacts is essential. This requires collecting baseline data to determine the state of the environment before mining begins, observing changes that occur during mining, and monitoring the recovery or restoration of the environment after decommissioning.

### *11. Monitoring Programs – Northern Participation*

Even if the monitoring program were carefully designed and executed, its results might fail to convince the people of the region of its validity. Residents of the north must be involved, especially in the implementation of the program, before they will trust the results. This involvement can be accomplished, in part, through the Environmental Quality Committees (see Section 11.2). They could fulfill a valuable liaison role by connecting their communities to the monitoring program. In addition, it is important that some mechanism be found to involve northerners directly in the activities of monitoring.

### *12. Community Health and Social Impacts*

A fundamental concern of many northerners is the possibility that uranium mining and milling operations might poison the air that they breathe, the water they drink, and the country foods they eat.

### *13. Community Vitality*

Community vitality, defined as the social well-being and quality of life experienced by community residents, is subject to both positive and negative impacts from uranium mining.

### *14. Decommissioning – Uranium Mining Contingency Fund*

The financial guarantees for decommissioning costs cover a period of, at most, a few decades after mining ceases. When contaminant concentrations have been reduced to acceptable levels, and the leakage of contaminants from tailings management areas and waste rock piles, etc., has stabilized, the operator can apply to abandon the sites.

However, tailings areas have the potential to pose a threat to the receiving environment for periods that may far exceed the life of an individual mining company. Consequently, the tailings management facilities will require monitoring for the foreseeable future. The panel agrees with the discussion and conclusions contained in the report submitted by the environmental assessment review panel that studied uranium mine tailings management areas near Elliot Lake, Ontario.” As with the Elliot Lake areas, the

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decommissioned Deilmann Tailings Management Facility would be required to contain contaminants for millennia, during which time many aspects of both the biophysical and institutional environments would be altered. There must be some means of ensuring regular monitoring of the integrity of contaminant containment systems and the performance of mitigation measures after institutional responsibility for the area has been transferred back to the government. For this reason, the panel recommends the establishment of a contingency fund to provide for the ongoing costs of long-term monitoring (and mitigation, should it be required) after the responsibility for the sites is returned to government.

## **GLOSSARY OF ACRONYMS**

<b>AECB</b>	Atomic Energy Control Board (predecessor to CNSC)
<b>AECL</b>	Atomic Energy of Canada Limited
<b>ALARA</b>	As low as reasonably achievable
<b>BNPD</b>	Bruce Nuclear Power Development
<b>CCNR</b>	Canadian Coalition for Nuclear Responsibility
<b>CEA</b>	Cumulative effects assessment
<b>CEAA</b>	Canadian Environmental Assessment Act
<b>CEMWG</b>	Cumulative Effects Monitoring Working Group
<b>CEPA</b>	Canadian Environmental Protection Act
<b>CLMC</b>	Cigar Lake Mining Company
<b>CNSC</b>	Canadian Nuclear Safety Commission
<b>CRC</b>	Chalk River Laboratories
<b>DNGS</b>	Darlington Nuclear Generating Station
<b>DUFDS</b>	Darlington Used Fuel Dry Storage
<b>DSC</b>	Dry Storage Container
<b>EA</b>	Environmental Assessment
<b>EIS</b>	Environmental Impact Statement
<b>EQC</b>	Environmental Quality Committees
<b>ICRP</b>	International Commission for Radiological Protection
<b>LLSB</b>	Low-Level Storage Building
<b>LLRW</b>	Low-level radioactive waste
<b>LLRWMO</b>	Low-Level Radioactive Waste Management Office
<b>NBP</b>	New Brunswick Power
<b>NFWA</b>	Nuclear Fuel Waste Act
<b>NWMO</b>	Nuclear Waste Management Organization
<b>OECD</b>	Organization for Economic Co-operation and Development
<b>OPG</b>	Ontario Power Generation Inc.

## **GLOSSARY OF ACRONYMS**

<b>PHAI</b>	Port Hope Area Initiative
<b>PNGS</b>	Pickering Nuclear Generating Station
<b>PWMF2</b>	Pickering Waste Management Facility 2
<b>QA/QC</b>	Quality assurance / quality control
<b>R&amp;D</b>	Research and development
<b>RWOS2</b>	Radioactive Waste Operations Site 2
<b>SRWMF</b>	Solid Radioactive Waste Management Facility
<b>UNBI</b>	Union of New Brunswick Indians
<b>WMA</b>	Waste Management Area
<b>WTC</b>	Waste Treatment Centre