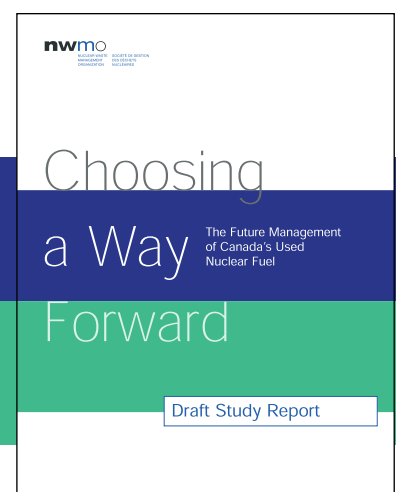


Dialogue Report

Dialogue on *Choosing a Way Forward* The NWMO Draft Study Report Toronto, ON - July 15-16, 2005

Stratos



NWMO Background Papers

NWMO has commissioned a series of background papers which present concepts and contextual information about the state of our knowledge on important topics related to the management of radioactive waste. The intent of these background papers is to provide input to defining possible approaches for the long-term management of used nuclear fuel and to contribute to an informed dialogue with the public and other stakeholders. The papers currently available are posted on NWMO's web site. Additional papers may be commissioned.

The topics of the background papers can be classified under the following broad headings:

1. **Guiding Concepts** – describe key concepts which can help guide an informed dialogue with the public and other stakeholders on the topic of radioactive waste management. They include perspectives on risk, security, the precautionary approach, adaptive management, traditional knowledge and sustainable development.
2. **Social and Ethical Dimensions** - provide perspectives on the social and ethical dimensions of radioactive waste management. They include background papers prepared for roundtable discussions.
3. **Health and Safety** – provide information on the status of relevant research, technologies, standards and procedures to reduce radiation and security risk associated with radioactive waste management.
4. **Science and Environment** – provide information on the current status of relevant research on ecosystem processes and environmental management issues. They include descriptions of the current efforts, as well as the status of research into our understanding of the biosphere and geosphere.
5. **Economic Factors** - provide insight into the economic factors and financial requirements for the long-term management of used nuclear fuel.
6. **Technical Methods** - provide general descriptions of the three methods for the longterm management of used nuclear fuel as defined in the NFWA, as well as other possible methods and related system requirements.
7. **Institutions and Governance** - outline the current relevant legal, administrative and institutional requirements that may be applicable to the long-term management of spent nuclear fuel in Canada, including legislation, regulations, guidelines, protocols, directives, policies and procedures of various jurisdictions.
8. **Workshop Reports** - provide information on the outputs and outcomes of some NWMO engagement activities including discussions and expert workshops.
9. **Assessments** - provides perspectives on the advantages and limitations of the management approaches under study.

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Dialogue on *Choosing A Way Forward*
The NWMO Draft Study Report
Toronto, Ontario, July 15-16, 2005

DIALOGUE REPORT

August 8, 2005

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DIALOGUE ON
CHOOSING A WAY FORWARD
THE NWMO DRAFT STUDY REPORT

– DIALOGUE REPORT –

Toronto, Ontario
July 15 & 16, 2005

Submitted to:

Nuclear Waste Management Organization

August 8, 2005

Prepared by:



Stratos Inc.
1404-1 Nicholas Street
Ottawa, Ontario
K1N 7B7
tel: 613 241 1001
fax: 613 241 4758
www.stratos-sts.com



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1 Introduction

1.1 Session Objectives

The Nuclear Waste Management Organization (NWMO) hosted the fifth of six dialogue sessions on its *Draft Study Report: Choosing a Way Forward - The Future Management of Canada's Used Nuclear Fuel* in Toronto, Ontario on July 15 and 16, 2005.

Participants to the dialogue sessions were invited on the basis of their prior involvement during the NWMO study process, including the compilation of background information, as well as workshops, roundtables, contributors to technical studies, and dialogue and engagement activities on a broad range of issues undertaken by NWMO since November 2002. A total of 68 participants attended the Toronto Dialogue Session. Appendix I provides a listing of the NWMO research and engagement activities from which the Dialogue Session participants were identified.

The purpose of the dialogue session was to:

- Provide an opportunity for participants to comment on the draft NWMO recommendation and *Draft Study Report*;
- Provide a forum for an exchange of views; and
- Provide the NWMO with the opportunity to improve the recommendation before it is finalized.

This report is a summary of views expressed at the dialogue session. The meeting was not intended to reach consensus among participants, though the report notes areas of general agreement. Several participants indicated a desire to speak with attribution. This request has been addressed within this report.

1.2 Session Opening

Elizabeth Dowdeswell, President of the NWMO, provided participants with an overview presentation on the work of the NWMO and the draft recommendation described in detail in its *Draft Study Report*.

Ms. Dowdeswell informed participants that all inputs to the *Draft Study Report*, including reports on previous dialogue and engagement sessions, are available on the NWMO website (www.nwmo.ca). Finally, she reminded participants that the NWMO is required to submit its final recommendation to the Minister of Natural Resources Canada by November 15, 2005.

2 Participant Views on the Recommended Approach

2.1 Requests for Clarification

Participants raised a number of questions with respect to nuclear power and used nuclear fuel issues in general, and with the *Draft Study Report* and the draft recommendation in particular, including:

- Why Manitoba was not included in the list of provinces recommended for initial site identification activities;
- The definition of “shallow” with respect to interim storage at the central facility;
- The location of the centralized interim storage facility in relation to the final deep geologic repository;
- The location of Ordovician sedimentary formations in Southern Ontario, and whether these include the Bruce, Darlington, and Pickering areas;
- The ability of the central long-term management facility, as proposed, to manage irradiated fuel other than used CANDU fuel;
- Why the technical program work at AECL’s Underground Research Laboratory (URL) near Lac du Bonnet in Manitoba was discontinued, what was learned at the URL, and whether the knowledge gained gives sufficient confidence to move forward with the deep geologic repository;
- NWMO’s definition of “safe and secure” as used in the report;
- Why the *Draft Study Report* uses the term “used nuclear fuel”, instead of “nuclear waste”;
- Ultimate ownership over the used nuclear fuel;
- What is meant by a “willing host community”; and
- Accountability for the report, especially where the term “we” is used.

2.2 General Views on NWMO and the *Draft Study Report*

2.2.1 Views on NWMO Engagement and Dialogue Processes

Many participants expressed support for the engagement and dialogue processes undertaken by NWMO to date, commending it for its duration, transparency and inclusiveness. The NWMO’s efforts and support for engaging Aboriginal communities were especially noted. A participant noted that her organization was grateful for the extensive consultations over the course of the exercise and congratulated NWMO on the *Draft Study Report* and the manner in which it promotes ongoing dialogue and engagement. A number of other participants said that they had been listened to by NWMO. One participant noted that the resources and assistance provided by NWMO marked the first time that Aboriginal peoples have had the necessary resources to dialogue effectively with nuclear utilities and their regulators on issues related to nuclear power.

Other participants had divergent views on the appropriateness of the NWMO engagement process. One participant¹ argued that the public engagement process was not acceptable, as in the view of Nuclear Waste Watch, it was not as formal, effective, and objective as those specified by legally-mandated environmental assessment processes. This participant noted on behalf of Nuclear Waste Watch that this organization is recommending that there be a federal – provincial environmental assessment to review the three management options in the Nuclear Fuel Waste Act following submission of the NWMO recommendation. One other participant viewed the dialogue process as being overly focused on reactor-site communities.

2.2.2 Views on the Draft Study Report

General Views

Many participants spoke positively about the *Draft Study Report*, indicating that:

- NWMO had done a good job of balancing the public good with the limitations imposed by its governing legislation, and the make up of its Board of Directors;
- The report successfully grappled with inputs from a diverse set of interests;
- The report is balanced, informative, comprehensive, and fair; and
- The tone of the report (directional and not prescriptive) is appropriate. It correctly conveys the range of opinions that exists on many of the key issues related to used nuclear fuel

A few individuals, however, stated that they had strong concerns with the *Draft Study Report*, including:

- One participant noted that the report was deficient in that it did not include a proper justification for the draft recommendation, and that its key weaknesses included.
 - The assessment methodology was not robust, appropriate or scientifically sound.
 - Lack of a rationale and substantiation for passive safety over active safety
 - Need to be clearer about the assumptions underlying the Assessment Team's report and how these were derived; and
 - The terms "precautionary principle", "Aboriginal Traditional Knowledge", and "adaptive management" are "invoked, but not applied" in the report and recommendation.

This participant noted that she was unable to provide comment on the NWMO recommendation as, in her view, the methodology used to reach the recommendation was fundamentally flawed and there was insufficient opportunity to test it.

- Another participant requested that NWMO clarify the manner in which it considered economic regions. In this participant's view, the economic regions concept makes sense as an analytical tool (i.e., it addresses risks to centres of high population and high economic activity) and moreover, he felt that the

¹ Dave Martin, Greenpeace Canada: attribution of comment requested.

Nuclear Fuel Waste Act required the NWMO to make a recommendation on a specific economic region for further site identification and assessment.

- Another stated that NWMO's work did not appropriately apply the stated "fairness" principle as it failed to discuss the role that must be played by nuclear power operators in eliminating the production of ongoing and future used nuclear fuel.²
- Two participants noted that the concept of Aboriginal Traditional Knowledge is not appropriately presented in the Draft Study Report. In particular, one participant felt that Traditional Aboriginal Knowledge is represented in a patronizing manner.³ The other noted that the view of some Aboriginal peoples' (that nuclear power generation is not wanted, and not needed) is not adequately communicated in the *Draft Study Report*.

2.2.3 The Draft Study Report and the Future of Nuclear Power

While offering general support for the *Draft Study Report*, several participants expressed concerns with the Report's neutrality of the issue of nuclear power generation. Regardless of their views on the future of nuclear power production in Canada, however, a strong majority of participants agreed on the need for decisions on the management of used nuclear fuel to be reached and implemented now.

Several participants expressed the view that the *Draft Study Report* and recommendation do not adequately address the need to limit waste by eliminating the production of used nuclear fuel. These participants noted:

- That the Report does not address the issue of the ongoing production of nuclear power, which has proven to be important to people as shown in a Greenpeace Canada poll that found that people are divided on this issue, with a slim majority favouring the phase out of nuclear power.⁴ The participant stated that Nuclear Waste Watch sees this as a fatal flaw and believes that there can be no consensus and no progress unless this issue is addressed. The participant called for a free Parliamentary vote on the NWMO recommendation, and a citizens' referendum on the future of nuclear power before proceeding with implementation. Other participants also noted that their support for the NWMO recommendation was conditional on the successful completion of a provincial (Ontario) and / or national dialogue on the future of nuclear energy (see earlier comments).
- That it is within NWMO's mandate to develop a socially acceptable solution, and that this requires NWMO to address the question of future nuclear generation and do a better job of analysing the full implications of the different scenarios provided for in the *Draft Study Report*⁵. This participant noted also that the Quebec Bureau des audiences publiques sur l'environnement (BAPE)

² Shawn Patrick Stencil, Greenpeace Canada – attribution of comment requested.

³ Anna Stanley, University of Guelph – attribution of comment requested.

⁴ Dave Martin, Greenpeace Canada – attribution of comment requested.

⁵ Shawn Patrick Stencil, Greenpeace Canada – attribution of comment requested.

recommended that Hydro-Québec defer a decision on the full expansion of the Gentilly-2 used fuel storage facility until:

1. Quebec's future energy strategy is determined;
 2. The fate of planned hydroelectric projects is clarified;
 3. Canada's requirements related to the Kyoto Protocol are finalized; and
 4. The federal plan for a permanent waste facility in Canada is finalised.
- Another participant⁶ drew attention to the 1988 report by the federal Standing Committee on Forestry, Energy, and the Environment "The Eleventh Hour" which recommended a moratorium on nuclear power expansion until the waste issue is addressed.
 - One participant stated that the National Council of Women⁷ had four overarching comments on the *Draft Study Report*, specifically:
 - 1) The Council is concerned that the NWMO mandate is too restrictive and should be expanded to address the complete nuclear fuel cycle;
 - 2) The timeline allowed for development of the NWMO recommendation and *Draft Study Report* is too restrictive, given the amount of unresolved technical issues.
 - 3) The NWMO's draft recommendation is not fully supported by the analysis provided and more rigorous argumentation is needed; and
 - 4) Any decision on nuclear waste will legitimize the continued production of nuclear waste and therefore a decision on the future of nuclear energy in Canada is needed before making decisions on the management of the associated waste.

This participant also suggested that a proper application of the precautionary principle would mean that Canada would not create more nuclear waste if there is insufficient storage available at nuclear reactor sites and no permanent long-term storage facility is available.

A number of other participants also expressed concern with the continued generation of nuclear power, noting:

- That it is time to get on with implementing a plan for a soft energy future, without nuclear power. Participants were referred to reports of the Pembina Institute, and the David Suzuki Foundation on how Ontario can achieve such a soft energy future; and
- That by reaching public agreement on our energy future, we will build acceptance and confidence in this recommendation for managing nuclear waste. Alternatively, it will be impossible to identify a willing host community without first reaching conclusions on whether the waste stream will be finite and well described, or open-ended and much more uncertain.

⁶ Ziggy Kleinau, Citizens for Renewable Energy – attribution of comment requested

⁷ Garcia Janes, National Council of Women – attribution of comment requested.

Other participants strongly disagreed with the above views and expressed their support for ongoing and expanded nuclear power generation. Some of these participants faulted the *Draft Study Report* for not communicating explicit support for continued nuclear generation. These participants expressed concern that the pro-nuclear position is under-represented in the report and questioned why the *Draft Study Report* discusses only the waste related issues associated with nuclear power generation, while not also discussing the positive benefits from nuclear power and the ability to manage associated risks. These participants also felt that the report needed to provide additional information on Ontario and Canada's future energy needs and the positive attributes of nuclear generation in relation to other energy supply choices.

Other Concerns with the Draft Study Report

Participants raised additional concerns with the Draft Study Report, including:

- Concerns were raised with the limited discussion of the transportation-related aspects of the recommendation in the *Draft Study Report*, further noting that the "community's right to know" is a fundamental principle that must be respected by all involved in the transport of nuclear waste. The NWMO was asked to clarify the duration, frequency, and scale of transportation activities that will be required to relocate the projected nuclear waste from the existing reactor sites to the recommended central facility.
- The NWMO was asked to acknowledge the recent US National Academy of Science study confirming that there is no safe level of radiation exposure.
- One participant stated that the *Draft Study Report* needed to place more emphasis on existing natural analogues to the concept of deep geologic storage. In his view, such analogues exist at sites such as those involving uranium deposits in Saskatchewan and adequately demonstrate that the used nuclear fuel can be inserted into the same geologic environment from which it has been extracted. Another participant said, however, that the Canadian Geosciences Council had formally expressed concern in the past about the analysis of natural analogues, as conducted by AECL, and characterized these studies as incomplete and not appropriately peer-reviewed, concluding that more work needs to be done in this area.

Participants identified a number of other particular areas of the report that they felt needed to be addressed, including that:

- The section of the report dealing with the "Nature of the Hazard" is inaccurate and that used nuclear fuel poses no more risk than natural uranium after a period of much less than 500 years;
- There is insufficient comparison of risk from used nuclear fuel to that of natural radiological hazards;
- There needs to be an acknowledgement that all energy sources produce waste and pose risks, and that the use of nuclear power poses fewer risks than those of an energy deficient world with a rising population and standard of living;

- The assumption that used nuclear fuel is a waste is not valid as the material represents an enormous resource that could be recycled by future generations;
- The *Draft Study Report* does not distinguish between real technical risk and socially perceived risk in an appropriate manner. The report should make more of an effort to dispel nuclear myths and discuss the real and limited risks of nuclear power. In the view of these participants, the likelihood of exposure is remote and the risk from the material is minimal, such that the NWMO recommendations are “overblown” and not commensurate with the actual risk involved.⁸ Others disagreed, however, arguing that the comparative analysis of relative risk is less important than analysis of cumulative and synergistic risks; and
- The *Draft Study Report* is overly concerned with social aspects and more needs to be done to communicate the technical and economic analyses that support the recommendation.

Finally, one participant⁹ noted that it is confusing to have the NWMO recommendation referred to as Option 4, and that decision-making could be complicated as a result. As the ultimate end-point recommended involves a deep geologic repository, this participant felt it would more accurate to associate the recommendation with Option 1 (deep geologic disposal in the Canadian Shield), as provided for examination under the *Nuclear Fuel Waste Act*. This comment was echoed by another participant¹⁰ who wished to go on record to say that Greenpeace Canada and Nuclear Waste Watch view the NWMO recommendation as Option 1 (deep geologic disposal in the Canadian Shield), but that it cannot guarantee isolation and containment of the waste over the long term and this avoids the concept of “producer” responsibility and the need to reduce the waste. They suggest a fair environmental hearing process be done on each of the three individual options identified in the *Nuclear Fuel Waste Act*.

2.3 Views on the Appropriateness and Key Characteristics of the Recommendation

Most workshop participants supported the NWMO recommendation, arguing that nuclear waste already exists and must therefore be managed regardless of the future of nuclear power in Canada, and that the overall recommended management approach is appropriate.¹¹ One participant congratulated the NWMO for recommending a solution that will engage communities over a long period of time. While participants offered supporting comments, critiques, and suggestions for improvement for each of the main aspects of the recommendation (see below) they also commented on a few cross-cutting issues including:

⁸ Dr. Jerry Cuttler, Cuttler & Associates, requested that this comment be noted.

⁹ Lisa Gue, United Church of Canada – attribution of comment requested.

¹⁰ Dave Martin, Greenpeace Canada – attribution of comment requested.

¹¹ A fair number of these participants stressed, however, that their support for the NWMO recommendation should not be misconstrued as support to current nuclear power operation, or as a justification for expansion of the nuclear industry.

- Some participants felt that the recommendation can only be considered appropriate in-so-far as it is intended to deal with a finite waste stream that involves waste from Canada's existing nuclear power reactors anticipated through until the end of their planned service life. In their view, the recommendation's benefits evaporate and additional studies will be required if the waste stream becomes non-finite, or significantly expanded due to the extension of nuclear power generation beyond the useful life of Canada's existing nuclear reactors. Of particular concern to these participants are transportation-related risks perceived to arise from a larger and continuous nuclear waste stream.
- Some participants viewed the illustrative timelines provided for in the *Draft Study Report* as too leisurely. These participants thought that the need and financial and technical capacities were already in place to allow for much faster implementation of the recommendation. These participants also expressed concern that momentum and political will could be very hard to sustain over the long timeframes envisioned, and that the consultation and study process would have to be repeated yet again should implementation not proceed promptly. Other participants, however, disagreed, and commented that the illustrative timelines seemed pragmatic and that their most important concern was that sufficient time should be allowed for informed decision-making to take place. One participant argued that the illustrative timelines were too short given the lack of existing container and deep geologic disposal technologies and the time that will be required to transport the projected 4 million used nuclear fuel bundles.
- One participant¹², went on record as stating that Greenpeace Canada and Nuclear Waste Watch do not find the recommendation appropriate and believe that it is not possible to safely managing nuclear waste material for a million years. They would prefer a recommendation of surface storage, at existing reactor sites, to allow for active rather than passive management and oversight.

Centralized Containment and Isolation

Most participants found the recommendation for centralized containment and isolation in appropriate geologic formations to be appropriate. These participants argued that:

- The approach was known to be technically sound, as concluded by AECL and the Seaborn Panel (1998);
- Canada has large areas of suitable geologic formations and siting should not be technically difficult;
- A centralized solution is the most desirable in the context of managing inherent problems in both security and transportation;
- There is less uncertainty about geology than about future societies and the approach correctly addresses the public's primary concerns related to safety and security. Some participants argued that the future is uncertain and that present society should not assume the indefinite continuation of current social institutions. They suggested that NWMO's primary objective should be to ensure

¹² Dave Martin, Greenpeace Canada.

the safety of future generations by designing specifically for the possibility of institutional control failures and by using a precautionary approach that involves sufficient isolation of the nuclear material over long timeframes. One participant called on the NWMO to be more balanced in its future outlook and readily acknowledge that the social uncertainties exist, along with the technical uncertainties already discussed in the report.

One aspect of the recommendation that concerned a few of the participants was the inclusion of Ordovician sedimentary rocks as a geologically appropriate formation. These participants argued that, in their view, past technical studies had shown these formations to be inappropriate. They also indicated that Canada had accumulated a large body of knowledge on granite-type formations, such that work on sedimentary formation would represent a set back and a significant, unwarranted, research investment to duplicate the body of knowledge in these structures.

Not all participants agreed with the recommendation of a centralized approach, especially if the volume of used nuclear fuel was open-ended beyond that envisioned through the continued operation of existing nuclear stations only through to the need of their planned service life. One participant¹³ felt that NWMO's recommendation for a centralized facility is misleading without being accompanied by a suspension of nuclear power generation as, should nuclear power generation continue, there will always be used nuclear fuel in storage at reactor sites. For these participants, future expansion of nuclear power operations might warrant a decentralized approach.

One area of concern to many participants was the issue of used fuel transportation and transportation-related risks. One participant questioned the amount of energy that would be required to support centralized containment and isolation and asked whether the risks and benefits had been examined over the complete project lifecycle. Another participant raised concerns with past impact tests on irradiated fuel containers, arguing that none of these involved containers that had been exposed to radiation over longer periods, which could make them more brittle and prone to failure. Several participants argued that NWMO should take steps to minimize the distance as well as the amount of time and material involved in transportation activities.

Phased Decision Making

Many participants offered support for the NWMO recommendation of adaptive management and phased decision-making, indicating that the recommendation was pragmatic in identifying the most likely implementation approach. These participants saw the recommended approach as allowing for:

- The development and demonstration of effective container, transportation, and deep geologic storage technologies;
- The identification and study of candidate sites;

¹³ Lisa Gue, United Church of Canada – attribution of comment requested.

- The emergence of new technologies and approaches that might make geologic isolation and containment of used fuel unnecessary;
- The development and implementation of appropriate regulatory regimes and governance structures;
- Capacity building and informed decision-making among youth, and potential host communities; and
- NWMO and other institutions to develop the capacity to fulfill their long-term mandates related to the used nuclear fuel.

Some participants disagreed with the phased decision-making approach, arguing that it sends the signal that this generation is only interested in talking about the issue and not getting on with the task of implementing a solution, and that in their view, the report is misleading in suggesting that the current generation will be addressing the problem when no substantive action will occur in the first 30 years.

Despite offering general support for the approach, several participants expressed concern that the phased / adaptive approach could lead to delays in the decision-making process by politicians, such that the implementation process could become derailed. Participants made a number of suggestions to NWMO to alleviate these concerns, including:

- Placing an increased emphasis on identifying activities that will need to take place during the first decade of implementation;
- Identification and discussion of short-term, discrete decision-points (e.g. what they are, what must be decided, when, by whom, with what implications) that are in tune with the electoral cycle;
- Including recommendations on outside time limits – say “up to 30 years” rather than “about 30 years”;
- Providing future society with a timeframe or target when they could consider “waking away”; and
- Presenting the phased implementation as a set of activities that will need to be undertaken in parallel in order to meet the illustrative timelines later.

Interim Shallow Storage

Participants offered mixed views on the appropriateness of the NWMO provision for interim, shallow underground storage at the central facility. Those supporting the provision argued that:

- Early centralization will increase security for the storage of used nuclear fuel;
- As an activity undertaken in parallel with the development of the deep geologic repository, it will minimize the time required until all the material is located safely underground;
- It will allow for demonstration of the required containment and isolation technologies and raise public confidence;

- It will assist in site identification activities as fewer sites will have appropriate formations for both interim shallow underground storage as well as permanent, deep geologic isolation;
- It will allow for more timely decommissioning and clean up should decisions be taken not to refurbish existing facilities (e.g. Point Lepreau or Gentilly-2); and
- It will provide citizens with a familiar and comfortable analogue to the current approach to the management of household wastes (i.e. collection, centralization, and final disposal).

Some participants argued that the NWMO provision for interim shallow underground storage was unnecessary, given that:

- Used nuclear fuel is currently being safely stored at existing reactor sites, some of which are proposing to expand their waste management facilities;
- The technological know-how already exists to ensure confidence in a deep geologic repository approach;
- Centralization of the waste too early will be a problem if it turns out that the site is not suitable for a deep geologic repository and the used nuclear fuel requires further transportation. Participants with this view favoured keeping the used nuclear fuel at existing reactor sites, until the deep geologic repository is operational; and
- This approach may maximize rather than minimize used fuel handling and related public and occupational exposures.

Other participants did not object in principle to the provision of shallow underground storage of used fuel at the central site, but commented that it was the weakest aspect of the NWMO recommendation. These participants called on the NWMO to include a better justification and rationalization for this element of the recommendation in the final study report. Among the concerns and questions raised by these participants were:

- Concern that this could lead to the worst-possible outcome – used nuclear fuel abandoned in unsuitable containers, in unsuitable formations, out of view, and forgotten about by future generations. If interim used fuel storage at the central facility is considered necessary, these participants strongly favour that it be located above ground;
- A perception that the risks, costs and benefits have not been well studied by NWMO and must be better rationalized within the final study report, including identification and examination of the relationship between depth and cost / safety; and
- That NWMO communicate that interim storage could extend over time frames much longer than those illustrated in the *Draft Study Report*.

Retrievability

The NWMO provision for retrievability of the used nuclear fuel from the deep geologic repository was widely supported on environmental integrity grounds, as it would allow

future generations to have access to the material in the event that there are problems with the deep geologic repository and the material needed to be relocated.

Other participants also offered support for the provision of retrievability on the grounds that:

- Regardless of our present desires, the material will always be retrievable by future generations and that this provision seeks to reduce the costs and potential for damage to the material if those generations make a determination in favour of retrieval¹⁴;
- The used nuclear fuel is a potential nuclear energy source; or
- New technologies (e.g. transmutation of radionuclides) may be developed to manage the used nuclear fuel in a safer and more permanent manner.

A smaller number of participants withheld support for the provision on all grounds, arguing:

- The purpose and justification for retrievability were unclear and unsubstantiated;
- Retrieval for the purpose of reprocessing and transmutation will increase rather than decrease the generation of hazardous material and the risk of public and worker exposure during handling;
- This provision makes the deep geologic repository more expensive and more technically difficult, meaning less public and political support for NWMO's desired end-point; and
- It creates uncertainty and confusion in a recommendation that is meant to provide certainty and permanence.

Continuous Monitoring

Nearly all participants indicated support for the NWMO provision for continuous monitoring, indicating that the provision:

- Makes sense and is essential to ensure the long-term protection of human and ecological health;
- Will allow for continuous learning and provide for well-informed decision making; and
- Is a precondition to future retrieval of the material, regardless of the intended purpose.

Participants did raise a few caveats to their support, however, including:

- The ability to monitor the used nuclear fuel must be demonstrated and sufficient resources must be set aside to support continuous monitoring, for extremely long time frames;

¹⁴ Some participants noted that the distinction between the terms "disposal" and "storage" within the report is confusing, given that the recommendation allows for sealing the repository.

- The public needs to have input on what will be monitored, how it will be monitored, and how the information will be publicly communicated and used in decision-making by NWMO and regulatory bodies;
- Appropriate monitoring techniques and methodologies must be identified to support retrieval of the types of information / data that are required. Monitoring should not be undertaken solely for its own sake, but only in instances where the information will be of interest to citizens and where it is required to support decision-making; and
- Continuous monitoring should involve independent parties, made up of technical experts, regulators (e.g. CNSC), and local citizens and be explicitly tied to the host community's decision-making structures.

3 Participant Views on the Conditions Required to Implement the Approach Successfully

Participants addressed five key implementation issues and offered their views on how implementation could proceed in a manner that builds public confidence and that will lead to successful outcomes. The five implementation issues addressed were:

- Citizen engagement;
- Governance;
- Financing;
- Siting; and
- Research and intellectual capability.

Participants noted a number of conditions that would need to be satisfied before implementation could continue apace. They urged the NWMO to begin thinking about implementation by acting in these areas, including:

- Building public and political support - NWMO cannot begin implementing the recommendation unless it can convince the public and politicians at all levels that the recommended approach is technically sound, economically viable, and socially acceptable. This will require significant investments and efforts in capacity building and engagement of the public and politicians (see below). It will be critical for NWMO to be seen as an implementation agency operating with the utmost integrity;
- Identification of a suitable site – participants viewed the site identification, assessment and selection phase as difficult, but critical. Participants stressed the need for NWMO to initiate related activities as soon as possible after submitting the recommendation to the Minister of Natural Resources Canada;
- Articulation of a broader energy strategy (see above) that better defines the role of future nuclear generation;
- Ensuring there is a common understanding going forward on key terms, “what is safe”, how a willing host community will be defined, what monitoring will be required, etc.; and

- Putting in place a committed organization (NWMO), with sufficient financial and technical resources and with clear, long-term accountabilities for implementing the recommendation, including research and development, record keeping, and continuity.

3.1 Participant Views on Citizen Engagement

Participants noted that success in implementing the recommendation will be contingent on NWMO undertaking a comprehensive citizen engagement and dialogue process that involves:

- Continued conduct of engagement and dialogue processes in an open, transparent, and independent manner. In the view of several participants, one reason why the nuclear industry has enjoyed only limited public support has been its closed and non-transparent approach to engagement in the past;
- Significant and ongoing investments to build the capacities of communities to make informed decisions. Wherever possible, NWMO should provide the resources and allow communities and Aboriginal peoples to design and implement their own engagement processes;
- Articulation of explicit and clear authorities for NWMO to negotiate and implement agreements with potential host communities. Participants indicated that past processes, involving low-level waste, failed because the negotiating agency did not have authority to implement the agreements that were reached with potential host communities; Deep River was mentioned as an example;
- Respect of recent and any future court decisions involving consultation with Aboriginal peoples; and
- Honest and straightforward communications with potential willing host communities, acknowledging that transportation of the used nuclear fuel may require decades, but that the community's guardianship over the material will need to be extended indefinitely, over several millennia.

3.2 Participant Views on Governance

Governance of the NWMO and related decision-making processes was an issue of great importance to many participants. All agreed that the NWMO Board of Directors needs to demonstrate more independence. A number of participants noted that sound corporate governance principles include the need for independent directors and recommended that the NWMO Board comprise a majority of directors independent from the nuclear utilities that produce and own the used nuclear fuel. Others agreed on the benefits of independent directors, but not necessarily as a majority. A few participants also recommended that NWMO ensure that future Board meetings are open to the public.

One participant suggested that the NWMO include formal Aboriginal participation, particularly by elders, in the NWMO governance processes and suggested a model based on that of the federal *Species at Risk Act*. Some participants also commented on the Advisory Council, noting that the current appointment process is not sufficiently

transparent. These participants called on NWMO to make recommendations for a representative Advisory Council, to accommodate different points of view and that has recognized familiarity with nuclear issues. Other participants however, while not objecting, in principle, cautioned the NWMO to ensure that decision-making does not become overly partisan and protracted. Some participants also called on the NWMO to recommend that the organization be subjected to the *Access to Information Act*, the *Auditor General Act*, and other provisions related to equity and visible minorities.

Several participants were concerned about the role of politicians at the federal and provincial levels once NWMO submits its recommendation to the Minister. These participants stated that they generally had a low level of trust in politicians' ability or willingness to address longer-term societal issues of importance. Participants called on the NWMO to provide more clarity on the decision-making process following the submission of the recommendation to the Minister and to make recommendations to ensure participatory and democratic processes will be followed. A further suggestion, to assist in maintaining honesty and integrity over longer periods and in the face of possible political interference, was for NWMO to make a commitment to relocate to the host community, once selected.

3.3 Participant Views on Siting

Most participants offered strong support for NWMO's draft recommendation of identifying a willing host community, indicating that this was a precondition to implementation of the recommendation. A small number of participants remained convinced, however, that NWMO would be unable to identify a willing host community. One participant suggested that, instead, NWMO should identify a geologically suitable and isolated portion of crown land and create a willing, purpose-built community around the waste management facility. This participant saw an analogy between this approach and that used throughout the history of mining in Canada. Another participant expressed confidence that a willing host community could be found, based on experience with siting other facilities such as a hazardous waste facility in Swan Hills, Alberta, low and intermediate-level waste facility in Kincardine, Ontario and the Winnipeg, Manitoba bio-safety laboratory. This participant stressed that the conditions required to identify a willing host community included:

- A technically appropriate concept that is determined to be environmentally safe and socially acceptable based on public assessments;
- Partnerships and formal, binding agreements with the host community;
- Peer review;
- Economic benefits for the community; and
- Opportunity for the community to exercise control, without external interference or dependence.

Those participants that supported the concept of a willing host community stressed that there could be no compromise over geological appropriateness and that any willing host

community must be proven to be technically appropriate. They also stressed that analysis of transportation modes and related implications should form an important part of the technical analysis. Some participants argued that, on ethical grounds, the facility should be located as close as technically possible to the populations that have benefited from nuclear power.

Another participant noted that technical and social criteria were equally important and called on NWMO to develop clear technical and social standards as a precursor to initiating siting activities. This would allow for transparency and equity in the manner in which site assessments are conducted and a willing host community selected. Siting criteria should include social justice criteria, to ensure that disadvantaged communities are not exploited. Other participants stressed the need for risk analysis related to site assessments to concentrate on potential impacts to the most vulnerable populations such as children and the elderly.

One of the key areas of concern to participants was the issue of how the boundaries of the “willing host communities” would be defined. Participants offered divergent views, with some arguing for narrow definition to include, primarily, the geographic community where the facility will be located. Others called for a much broader definition, including all communities along transportation corridors. Others called for an even broader definition that would include interest-based communities, such as civil society organizations. Others still disagreed, however, stressing that local communities are fully capable of dealing with the issues at hand, without the involvement of national level organizations and should be left to make their own decisions. With uncertainty as to the future of nuclear power in Canada, some participants suggested that the entire country should be considered as part of the definition.

Participants also raised questions and exchanged views on the manner in which decision-making will be undertaken once such definitional issues are addressed. Participants worried about the intra and inter-community conflicts that may result and stressed the need to address the issues of how decisions will be made, and by whom, prior to initiating any siting activities.

Participants cautioned the NWMO to look carefully at lessons learned from past siting exercises involving hazardous waste and low-level nuclear waste and especially at lessons learned from experiences in Port Hope and Deep River, Ontario. Participants expressed a cynicism that all of the good work completed by NWMO to date might be lost and a solution “bulldozed” onto a technically suitable community, whether it was willing or not. These participants stressed that governance issues were key (see above) as well as capacity building, honesty, transparency, and independence so as to ensure that communities are capable of making informed choices.

Finally, participants expressed concern that the identification of a willing host community could prove to be exceptionally difficult. They called on the NWMO to spell out the steps

that will be taken if a willing host community can't be located, such that existing reactor sites do not become the de-facto end points for the long-term management of Canada's used nuclear fuel.

3.4 Participant Views on Financing

Participants expressed concern about the availability of sufficient financing to allow for complete implementation of the recommendation over very long time periods. Participants were especially concerned that sufficient resources be made available to support capacity building, engagement and dialogue with potential host communities, as well as ongoing and long-term monitoring of the facility.

While acknowledging the steps that had been taken to provide for financial surety under the *Nuclear Fuel Waste Act* participants stressed that they were not confident in the long-term viability of the nuclear power producers, drawing analogues to the mining companies that have used waste and cleanup-related liabilities as an excuse to enter into bankruptcy protection, and to other companies that have failed to honour legally-mandated pension plan contributions.

Participants made a number of suggestions, which could be acted on to increase their confidence in the NWMO's financial surety provisions, including:

- Ensuring greater transparency of the trust funds, how they are being managed, and by whom;
- Clarifying ultimate accountability (NWMO, utilities, governments) for the trust funds;
- Ensuring all financial requirements are provided for by contributions made during the remaining planned service life of the existing reactors;
- Establish a requirement for an up-front performance bond;
- Require contributions from a wider circle of contributors, including uranium mining companies and nuclear fuel bundle manufacturers;
- Require utilities to purchase insurance that ensures sufficient funds will be available;
- Require utilities to include costs related to used fuel management as a line item on customers' utility bills, and charge those costs on a consumption basis; and
- Recommend that federal and / or provincial governments provide a guarantee that they will act as the ultimate guarantor to the required contributions from the nuclear power utilities.

Some participants also suggested that NWMO recommend a requirement for nuclear power utilities to contribute matching funds to renewable energy and energy efficiency projects for every dollar that is set aside in trust funds for used nuclear fuel management. Other participants disagreed, however, stressing that there is a need to acknowledge that the fuel and waste are "owned" by the citizens of the province and that its ratepayers and taxpayers must ultimately pay for any such proposals, not the

nuclear utilities themselves. These participants called on NWMO to ensure that costs are adequately factored into its decision-making.

3.4.1 Research and Intellectual Capabilities

Participants recognized that implementation of the NWMO recommendation will require a significant and ongoing investment in research and intellectual capabilities. Participants expressed concern that today's youth are not engaged in issues, trades and professions concerning the nuclear industry, while at the same time the institutional memory and capacities of the current nuclear workforce are eroding.

Participants identified a need to invest in and train younger people, and if necessary, draw on outside expertise through immigration so that personnel with the required skills and working knowledge of the hazards and coping mechanisms of working with nuclear material will be in place when they are required to implement the recommendation. Participants also stressed the importance of also including local people in training and apprentice programs once the willing host community is defined. Finally, participants encouraged the NWMO to initiate and maintain a robust research program, especially given the decline of research activity undertaken by AECL. Participants encouraged the NWMO to make and maintain strong connections to international research initiatives in radioactive waste management, and to network with and share lessons learned with other jurisdictions that are also developing solutions for the long-term management of used nuclear fuel.

4 Conclusion and Next Steps

Elizabeth Dowdeswell thanked the participants on behalf of the Nuclear Waste Management Organization for participating and sharing their views. Ms. Dowdeswell noted that the dialogue met all expectations in terms of exposing the range of perspectives on the issue and the NWMO draft recommendation. Participants were informed of the balance of the engagement process with respect to the *Draft Study Report*. Finally, Ms. Dowdeswell encouraged participants to make further submissions to the NWMO via letter, or through the NWMO website at www.nwmo.ca. More information on submitting written comments can be found there.

Appendix I: Dialogue Session Invitations

Participants to the dialogue sessions were invited from the provinces involved in the nuclear cycle - Ontario, Québec, New Brunswick, Manitoba and Saskatchewan. Participants were identified on the basis of their prior involvement with NWMO including engagement and dialogue activities, research activities, and those that expressed an ongoing interest in the work of the NWMO.

In total, Dialogue Session invitees were identified on the basis of their participation in the following NWMO activities:

- Individuals who have made submissions to the NWMO;
- Authors of Background Papers;
- Aboriginal dialogue leaders;
- Traditional Knowledge Workshop;
- Mayors/Municipal leaders and staff of the Canadian Association of Host Communities;
- Ethics Roundtable;
- People from Public Information & Discussion sessions who asked that the NWMO keep them informed; and
- Organizers and participants of key NWMO events:
 - Scenarios Workshops,
 - Technical workshops
 - Public Policy Forum;
 - Community Dialogue Workshops;
 - CPRN Dialogues (those that asked NWMO to keep them informed);
 - National Stakeholders and Regional Dialogues;
 - Nature of the Hazard Workshop.