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NUCLEAR WASTE MANAGEMENT ORGANIZATION
SOCIÉTÉ DE GESTION DES DÉCHETS NUCLÉAIRES

August 2005

Dialogue Report

Dialogue on *Choosing a Way Forward* The NWMO Draft Study Report North Bay, ON - July 18-19, 2005

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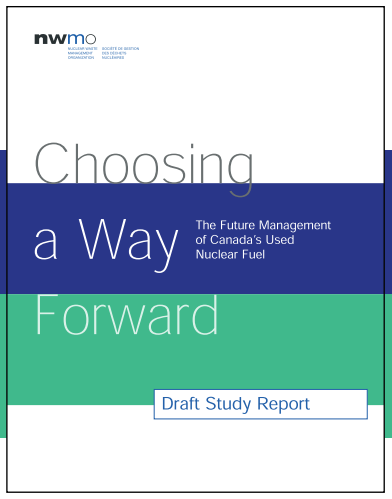

NWMO Background Papers

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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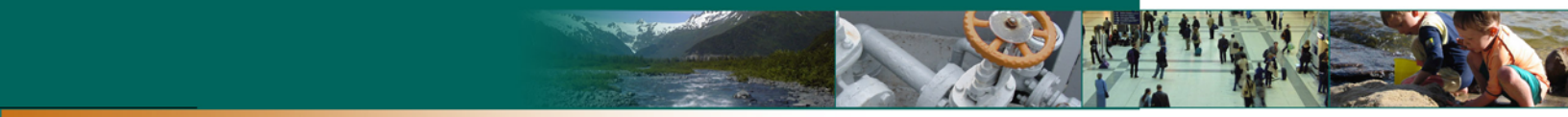

Dialogue on *Choosing A Way Forward*

The NWMO Draft Study Report

North Bay, Ontario, July 18-19, 2005

DIALOGUE REPORT

August 8, 2005

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DIALOGUE ON

CHOOSING A WAY FORWARD
THE NWMO DRAFT STUDY REPORT

– DIALOGUE REPORT –

North Bay, Ontario
July 18-19, 2005

Submitted to:

Nuclear Waste Management Organization

August 8, 2005

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1 Introduction

1.1 Session Objectives

The Nuclear Waste Management Organization (NWMO) hosted the sixth of six dialogue sessions on its *Draft Study Report: Choosing a Way Forward - The Future Management of Canada's Used Nuclear Fuel* in North Bay, Ontario, on July 18-19 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 17 participants attended the sessions. 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.

1.2 Session Opening

Elizabeth Dowdeswell, President of the NWMO, provided participants with an overview presentation of the work of the NWMO and the main elements of the draft recommendation described in detail in its *Draft Study Report.* She emphasized that how the management system for used fuel is implemented is as important as the technical choice to be made.

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 the *Draft Study Report* and development of the draft recommendation, including requests for clarification on:

- Transportation issues and the involvement of communities along the transportation route, and the implications of a community expressing opposition to transport of radioactive waste through its jurisdiction, such as the recent motion passed by the North Bay city council.
- Experiences in other countries and what we can learn from them.
- How will the *Draft Study Report* change as a result of this process; specifically, will a summary of changes to the final report be presented and when will it be available? Will changes simply be listed or will the rationale for each change also be provided?
- What constitutes the NWMO recommendation - does it include details contained in appendices or in background reports?

Elizabeth Dowdeswell and Sean Russell of the NWMO responded to these questions and indicated where further information is contained in the *Draft Study Report*.

2.2 General Views on the *Draft Study Report*

Several participants commended the NWMO for its engagement process and for balancing technical and social considerations in the *Draft Study Report*.

Despite general support for its engagement and dialogue activities, one participant expressed concern that the NWMO's Canada-wide engagement activities may dilute the input from the communities that will potentially be most affected by the management of nuclear waste.

Some participants expressed concerns that the *Draft Study Report* did not go far enough in examining issues associated with:

- The future of commercial nuclear power production in Canada; and
- Energy policy in Canada, including the presentation of a life cycle cost benefit analysis of different energy sources, so that the costs of nuclear waste management can be put into context.

A few participants stated that their confidence in the NWMO and recommendations of the *Draft Study Report* was limited for the following reasons:

- The NWMO is funded by the waste owners and is not independent; and
- The mandate of the NWMO is too restrictive because it focuses exclusively on waste management.

Several participants felt that further nuclear energy production needs to stop in order to build the confidence and trust necessary for a discussion about nuclear waste management. One of these participants added that there is an inherent bias in separating the waste management issue from the nuclear energy issue. However, another participant stated that there needs to be a solution, or an agreed approach, to nuclear waste management before a broader energy/nuclear policy discussion is possible.

Most participants agreed on the need for long-term dialogue and engagement to build trust and awareness. To this end, participants stressed the importance of education, starting with youth at the high-school level, and the establishment of a learning centre, perhaps affiliated with a university, in or near the host community. A few participants also stated that there are legacy issues related to poor examples of dialogue for mining and municipal waste management in Northern Ontario. They commented that in the current case, at least NWMO is providing the opportunity for dialogue.

2.3 Views on the Appropriateness and Key Characteristics of the Recommendation

Participants agreed on the need to implement an effective management approach for existing nuclear waste notwithstanding the broader issue identified above. One participant commented that the recommendation of Adaptive Phased Management presented in the *Draft Study Report* is very general in nature.

Centralized Containment and Isolation

Many participants expressed support for the NWMO recommendation for centralized containment and isolation of used fuel in a deep geologic repository in a suitable rock formation. These participants felt that this storage option has the following advantages:

- Technical feasibility;
- Institutional control through centralized storage;
- Protection of human populations by providing storage at depth, multiple barriers, and chemical isolation.

However, several participants expressed social concerns about this management approach, including the following:

- Deep geological containment and isolation will place the waste “out of sight and out of mind” and will compromise nuclear stewardship.
- Transportation is a key social challenge associated with this option since it involves moving waste from various reactor site locations to a centralized facility.
- There remains mistrust in the government’s ability to take the necessary decision, and concerns over the NWMO’s ability, to implement this option in the best interest of the public and the environment as the NWMO is not perceived as being at “arms length” from the nuclear industry.

- This option may give the signal to continue or expand nuclear energy production by 'solving' the waste problem.

A small number of participants questioned the terms "isolation" and "containment" by stating that the waste is being buried but not truly isolated, as various factors, such as water intrusion, may lead to environmental exposure.

Despite the aforementioned concerns, participants agreed that containment and isolation in a deep geologic repository was, at the very least, the best currently available option for long-term storage.

Phased Decision-Making

Participants expressed general support for the NWMO's phased management approach, because it allows for ongoing discussion and learning, and fine-tuning of the technical and social aspects associated with developing a deep repository for used nuclear fuel. From a technical standpoint, participants believed that the approach allows for the incorporation of scientific advancements, and for ongoing scrutiny of engineering concepts as a reflection of necessary "engineering humility". From a societal standpoint, participants believed the approach would also accommodate changing priorities with respect to fossil fuel usage and emerging energy alternatives.

Most participants argued that the illustrative timeline for Adaptive Phased Management should be accelerated based on the following concerns:

- Some reactor-site communities may not accept ongoing storage of used fuel for the next 30 to 60 years.
- There is a need to convey a sense of urgency for today's generation, which has benefited from the production of electricity by nuclear power.
- One cannot assume that future societies will be as stable or prepared as our today's society.
- Technical, social, and political knowledge needs to be transferred to the younger generation and to future generations before it is lost.

Despite the desire to accelerate the proposed implementation timeline, participants agreed that the biggest challenge will be siting a central facility and that the used nuclear fuel should not be moved until an appropriate site has been identified. On this point, some participants indicated that the quality of the public engagement process would have an impact on how quickly a site is found; that is, a good public engagement process will proceed more smoothly and more quickly than a poor one. Furthermore, participants expressed the need to strike a balance between maintaining urgency and moving forward with nuclear waste management, and recognizing the conditions for not pursuing an option any further. Some participants believed that there will be more opportunities to accelerate the schedule once siting had been resolved.

Interim Shallow Storage

Participants offered mixed views about for the NWMO's option for interim shallow underground storage of used fuel at the central site while awaiting the development of the deep repository for long-term management.

Some participants believed that the rationale for interim storage in the *Draft Study Report* required clarification; a few of these participants questioned whether this option was included primarily for "public relations" purposes. Some participants also questioned the technical need for such a provision, preferring instead a direct transfer of used nuclear fuel from the reactor sites to a deep geologic repository to accelerate the implementation process and to minimize the risks and costs associated with an additional storage facility. One participant questioned the logic of moving the used nuclear fuel to a centralized facility before the deep geologic repository was tested and proven. This participant was also concerned about the possibility of future governments making the decision not to build the deep geologic repository following the transfer of used nuclear fuel to a shallow interim storage facility.

Other participants appreciated the social advantages of including the shallow interim storage option, such as allowing time for demonstrating the deep geologic repository concept, and allowing for used nuclear fuel to be removed from reactor sites within a shorter time frame. Participants also indicated that the relatively low incremental cost of including interim shallow storage justified this option.

Retrievability

Participants also offered mixed support for the element of retrievability of used nuclear fuel. Some participants believed that retrievability is necessary to allow future generations to make decisions as to whether, or when, to close the deep repository permanently, and about using the used nuclear fuel as a resource.

However, other participants believed that incorporating retrievability into the design could compromise security and that controlling access to the repository would be an ongoing concern. Other concerns included the increased cost of maintaining retrievability of used nuclear fuel, and the health and safety risks for workers retrieving the used fuel, if necessary.

Most participants linked retrievability to monitoring as it was assumed that the used nuclear fuel should be accessible if a problem was identified through monitoring, and also for the purpose of upgrading or repairing monitoring equipment. A few participants also pointed out that, in mining terms, the waste will always be retrievable, whether this feature is incorporated into the design or not.

Continuous Monitoring

Participants offered support for continuous monitoring of the used nuclear fuel as a way of identifying any problems for assuring the public that the facility continues to be safe,

and for maintaining stewardship of the used nuclear fuel indefinitely. Despite this general support for the concept, participants offered some qualifications, including:

- The geologic repository should not be 'over-monitored' in a way that might compromise the integrity of the geosphere barrier which surrounds the deep repository; for example, by drilling too many monitoring boreholes and providing the potential for groundwater connectivity between fractures in the rock. This issue was also identified as a concern for the characterization of a potential site.
- Citizen involvement in monitoring is critical and independent funding should be provided for this.
- Monitoring results must be presented publicly in clear and accessible terminology, and in the context with respect to the level of the hazard.
- Monitoring should be expanded to include baseline monitoring at the reactor sites prior to moving the used nuclear fuel, and transportation routes.

A few participants stressed the importance of being able to distinguish real failures from monitoring equipment failures when an abnormal result is reported. One participant also expressed concern that there could be a reluctance to open the deep repository if monitoring indicated a problem. Therefore, it was recommended that a precautionary approach be applied in the design of the deep geological repository and monitoring systems, and that action levels for different possible monitoring results be clearly defined.

One participant did not see the need for monitoring and suggested that if there is a leakage of radioactivity from the used nuclear fuel resulting in damage to the land and/or water supplies, nothing can be done about it because the damage would be irreversible.

2.4 Opportunities for Improving the Draft Study Report and Recommendation

Participants made a number of suggestions for strengthening the Draft Study Report and recommendation, which, in their view, would contribute to increased support and public confidence in the recommendation. These suggestions included:

- Provide the reason and basis for including Ordovician rock as a potential geological environment for the deep repository;
- Clarify decision points and sequencing for moving used nuclear fuel from reactor sites to the centralized site and ensure consistency between text, tables, and figures on this issue;
- Avoid euphemistic terminology (e.g. waste versus used nuclear fuel);
- Provide additional justification for interim shallow underground storage at the central site;
- Identify the option of accelerating the implementation timelines more explicitly; and
- Provide stronger justification for monitoring, including an explanation of what action might be taken if a problem was identified.

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

Participants identified the following issues when asked what matters most to them in the implementation of the recommended approach, particularly in building confidence among the public:

- Public and community education;
- Trust and transparency;
- Financing;
- Clear decision points and 'exit ramps';
- Research to make nuclear waste inert;
- Assurances of nuclear energy phase-out; and
- Leadership.

Participants viewed these issues as essential to achieving successful outcomes during implementation.

Participants offered their views in more detail on the following six key implementation issues identified in the *Draft Study Report*:

- Siting;
- Governance (institutions and decision-making);
- Citizen engagement;
- Financing;
- Research and Intellectual Capability; and
- Implementation Plans.

The overarching issues listed above were common themes in the discussion of many of the implementation issues.

3.1 Participant Views on Siting

Participants identified a number of questions and considerations that they felt NWMO would need to work through to ensure that a siting process for a central facility is successful:

- Several participants emphasized that all potential host communities must first satisfy technical or scientific criteria (especially geological factors, such as avoidance of fault lines and areas of mineralization), before being considered further on the basis of social criteria.
- The nature of consent or support required from a willing host community: How will members of a potential host community express consent (referendum, telephone poll) and what would constitute an acceptable margin of support (50%

plus one?). Concerns were raised by some participants over elected officials such as town councillors making such a decision without broad community support.

- The process must be ethically driven, must not be coercive (e.g. communities should not be "played off each other"), or perceived to be coercive and must be based on a full disclosure of risks and benefits. To this end, one participant suggested the establishment of an ethics body (see governance).
- What is considered a community of interest? Support must be garnered from more than just the host community; communities along transportation routes or aboriginal land areas are also important, for example.
- What are the implications of siting choices for communities along the transport route?
- There was also some concern about the economic benefits offered by the NWMO in effect "bribing" a community and that safeguards were needed to prevent "desperate people doing desperate things" in communities facing economic hard times.

Several participants believed that used fuel transportation is a potentially difficult issue, and recommended that transportation be minimized by siting the deep repository close to the nuclear reactors and by consolidating used fuel in fewer shipments. A few participants asked whether communities along transportation routes would have a right to refuse transit. Some participants believed that it would be fairest to locate the deep geologic repository in one of the reactor-site communities, as these communities had benefited most from the production of the radioactive waste. These participants felt that used nuclear fuel from the south should not be simply dumped in the north.

3.2 Participant Views on Governance

Participants views on governance were limited to the structure of the NWMO itself and various suggestions were made on how to modify or transform the organisation.

A few participants recommended that the NWMO be replaced or transformed into an arms-length organization as recommended by the Seaborn Panel in 1998.

Other participants recommended that the composition of the NWMO Board of Directors be diversified to include not just the waste owners, but also citizenry, representatives from environmental groups, and other non-industry directors.

A few participants, while appreciating the input of the current NWMO Advisory Council, felt that the nomination and appointment process should be reviewed, as Advisory Council members are currently appointed by the NWMO Board. These participants recommended that the Advisory Council be made more representative of the general public, that the nomination process be more transparent, and that the Advisory Council be given decision-making powers. However, other participants questioned whether the

NWMO could maintain an effective management process if the Advisory Council also had decision-making powers.

One participant emphasized the importance of upfront and continuing leadership during implementation, especially to build confidence during the siting process. This participant envisioned leadership being provided by a group of ethicists, moral leaders, and social leaders with no prior association with the nuclear industry. It was suggested that the mandate for this group would be to ensure that siting (Step 1) is done ethically, which would address one of the recommendations of the Seaborn Panel.

Some participants argued in favour of placing the deep geologic repository in an isolated area and building a community around it. They argued that the site should be situated on federal land.

3.3 Participant Views on Citizen Engagement

Participants stressed the importance of education as the basis for meaningful citizen engagement. Some participants also felt that citizen engagement could be achieved by having citizen representation within the NWMO (see section 3.2). A few participants also expressed the need to have the citizen engagement process institutionalized to establish practices that exceed the current letter of the law.

Most participants emphasized the importance of education in helping the public make informed choices and decisions about nuclear waste management. Participants identified a number of considerations for the type of education that would best prepare the public to deal with nuclear waste issues:

- Formal education on nuclear energy and broader energy issues at the high school and university level;
- Basic environmental and natural science literacy at the elementary school level;
- Informal and broader public education through various media including television and the internet; and
- Emphasis on Aboriginal education, especially if a site in or near an Aboriginal community is considered.

Several participants emphasized that an overarching requirement for educational initiatives is that they be broad in scope, by addressing energy policy and energy alternatives; and diverse and balanced, by including arguments for and against nuclear power. A few participants warned that education would otherwise be perceived as, or used for, propaganda or indoctrination.

Participants also indicated that educational requirements to support decision-making will change at different stages of the process. For example, education to allow informed decision-making for siting will differ from education around monitoring of the deep geological repository, to allow the host community to understand the monitoring results.

Some participants suggested a possible role for a third party in providing education, in addition to industry and government. A few participants suggested that information packages for educators be prepared.

Participants felt strongly that trust was paramount for the successful outcome of any nuclear waste management plan. One participant stated this succinctly with the phrase "no trust, no plan". Participants emphasized that trust cannot be built on assurances. They stressed that trust can only be achieved when the public has the information and capacity to make informed decisions. Another participant viewed the desirable situation being one of "healthy and open-minded mistrust" of the nuclear industry.

Some participants noted they have difficulty trusting the government on these issues given the way they felt the government managed public engagement for the transportation of mixed-oxide fuel (MOX) a few years ago.

A few participants stated that they could not have confidence in the current process without a commitment that nuclear power will be phased out, or at least without a broader discussion about the future of nuclear power. Others saw the need for the NWMO to be more independent from the waste owners to have confidence in the NWMO.

Participants also offered practical suggestions for maintaining and improving public engagement, including:

- Improvements to the NWMO website by making it more user-friendly and including separate portals for youth and adults; and
- Informing current electricity ratepayers about setting aside funds for nuclear waste management.

3.4 Participant Views on Financing

While recognizing the financial surety provisions that have been proposed within the *Draft Study Report*, some participants still expressed concern about the long-term reliability of current financial commitments in the event of a major financial crisis. These participants questioned whether government would guarantee the funds if the waste owners failed to provide them.

The perception of several other participants was that the taxpayer would eventually have to pay at least some costs of managing used nuclear fuel and that this needed to be communicated to the public.

A few participants wanted the NWMO to investigate the idea of the government establishing an alternative energy fund in parallel to funds set aside for used nuclear fuel management.

3.5 Participant Views on Implementation Plans

Participants stressed the importance of moving forward with long-term used fuel management as fast as possible without compromising fair and informed community decision-making. A few participants suggested that the NWMO establish clear decision points and identify contingencies, or "exit ramps", for situations where a planned activity or step cannot be completed (e.g. a host community is not found) or is deemed inappropriate.

3.6 Research and Intellectual Capabilities

Several participants urged the NWMO to promote research on the treatment of used nuclear fuel to render it inert or less dangerous. These participants felt that it was important to investigate this process while continuing to plan for long-term nuclear waste management.

Some participants asked who should set the research agenda and agreed that safety and security should be drivers for research and development (R&D).

A few participants believed that there needed to be a multidisciplinary approach to R&D. One participant stated that the current Ontario Power Generation approach to R&D was a potential model for the NWMO to adopt.

One participant was concerned about maintaining the current level of intellectual capacity concerning deep geological storage and other aspects in future generations. This participant suggested the need for an information and knowledge repository, or other systems of knowledge transfer.

4 Conclusion and Next Steps

Sean Russell thanked the participants on behalf of the NWMO. Mr Russell then outlined the balance of the engagement process with respect to the *Draft Study Report*. Participants were encouraged to read the draft report in detail as many of the concerns raised during the dialogue session are addressed in greater detail there. Finally, Mr Russell encouraged participants to make further submissions to the NWMO via letter, or through the NWMO website at www.nwmo.ca before August 31, 2005. 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.