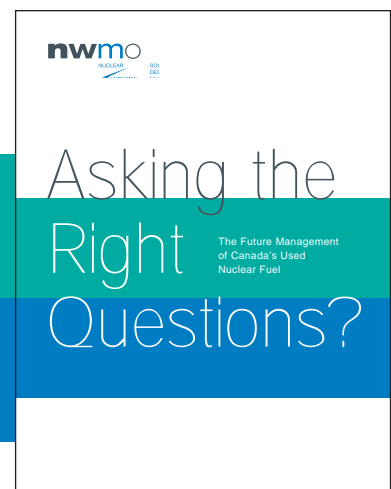


DPRA Final Report - Appendices

# National Stakeholders and Regional Dialogue Sessions Regarding NWMO Discussion Document 1 “Asking the Right Questions”

DPRA Canada



## **Discussion Document 1: Asking the Right Questions? – What Canadians are Saying**

The NWMO has committed to using a variety of methods to dialogue with Canadians in order to ensure that the study of nuclear waste management approaches reflects the values, concerns and expectations of Canadians at each step along the way.

A number of dialogue activities have been planned to learn from Canadians whether the elements they expect to be addressed in the study have been appropriately reflected and considered in Discussion Document 1. Reports on these activities will be posted on the NWMO website. Your comment is invited and appreciated.

### **Disclaimer**

This report does not necessarily reflect the views or position of the Nuclear Waste Management Organization, its directors, officers, employees and agents (the “NWMO”) and unless otherwise specifically stated, is made available to the public by the NWMO for information only. The contents of this report reflect the views of the author(s) who are solely responsible for the text and its conclusions as well as the accuracy of any data used in its creation. The NWMO does not make any warranty, express or implied, or assume any legal liability or responsibility for the accuracy, completeness, or usefulness of any information disclosed, or represent that the use of any information would not infringe privately owned rights. Any reference to a specific commercial product, process or service by trade name, trademark, manufacturer, or otherwise, does not constitute or imply its endorsement, recommendation, or preference by NWMO.

**nwmo**

NUCLEAR WASTE  
MANAGEMENT  
ORGANIZATION

SOCIÉTÉ DE GESTION  
DES DÉCHETS  
NUCLÉAIRES

**DPRA FINAL APPENDICES – June 2004**

# Dialogue

National Stakeholders and Regional  
Dialogue Sessions

REGARDING NWMO – DISCUSSION DOCUMENT #1  
“ASKING THE RIGHT QUESTIONS”



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## **APPENDIX 1: LIST OF DIALOGUE PARTICIPANTS**

- 1.1 National Stakeholder Dialogue Sessions
- 1.2 Ontario Regional Dialogue Sessions
- 1.3 Québec Regional Dialogue Sessions
- 1.4 New Brunswick Regional Dialogue Sessions

## APPENDIX 1: LIST OF DIALOGUE PARTICIPANTS

### 1.1 NATIONAL STAKEHOLDER DIALOGUE SESSIONS

The following were in attendance at the National Stakeholder Dialogue Session #1, March 8<sup>th</sup>, 2004 and/or Session #2, March 25<sup>th</sup>, 2004 at the Aristocrat Suite Hotel in Ottawa:

Name	Organization
Alex Wood	National Round Table on Environment and Economy
Anna Stanley	Trudeau Foundation
Catharine Laidlaw-Sly	National Council of Women of Canada
Colin Allan	The Royal Society of Canada
David Martin	Sierra Club of Canada
David Shier	Canadian Nuclear Workers Council
Don Wiles	Chemical Institute of Canada
Frank Palmater*	Woodland Metis
Jelena Golic	National Women's Associations of Canada
Ken Smith	Canadian Nuclear Society
Marc Chenier	Canadian Coalition for Nuclear Responsibility
Mary Lou Harley	United Church of Canada
Michael Earle	Power Workers' Union
Michèle Provencher	Transport Canada
Murray Elston	Canadian Nuclear Association
Paul Bates	Canadian Standards Association
Peter Dyne	Consumers Council of Canada
Robert Donahue	Canadian Geotechnical Society
Sophie Theriault	Trudeau Foundation
Ted Shin	Canadian Standards Association
Valérie Langlois	Youth Round Table on the Environment

\*Attended as an observer

## 1.2 ONTARIO REGIONAL DIALOUGE SESSIONS

The following were in attendance at the Ontario Regional Dialogue Session #1, March 4<sup>th</sup>, 2004 and/or Session #2, March 27<sup>th</sup>, 2004 at the Best Western Hotel in North Bay:

Name	Organization
Al Leggett	Ontario Society for Environmental Management
Bill Limerick	Northwestern Health Unit
Brennain Lloyd	Northwatch
Derek Paul	University of Toronto, Department of Physics
Dougal McCreath	Laurentian University, School of Engineering
Frank Palmater	Ontario Metis Aboriginal Association
Gary Scripnick	Timmins Economic Development Corporation
George Ylonen	Concerned Citizens of Manitoba
Graham Strickert	Lakehead University Student Union
Ido Vettoretti	Ontario Public Health Association
Jack Falkins	Ontario Metis Aboriginal Association
Janice Matichuk	Atikokan Citizens for Nuclear Responsibility
John Coupland	Thunder Bay Emergency Measures Organization
John Jackson	Ontario Environmental Network
Jose Freire-Canosa Dr.	Society of Energy Professionals
Linda Cunningham	Federation of Northern Ontario Municipalities
Lynn Ann Lauriault	Social Planning Council
Monica Cullum	Provincial Council of Women of Ontario
Phillip Penna	Canadian Uranium Alliance
Roy Hains	Ontario Northland Transportation Commission
Shirley Farlinger	IICPH
Vernon Edwards	Ontario Federation of Labour

### 1.3 QUÉBEC REGIONAL DIALOGUE SESSIONS

The following were in attendance at the Québec Regional Dialogue Session #1, March 9<sup>th</sup>, 2004 and/or Session #2, April 15<sup>th</sup>, 2004 at the Hyatt Regency in Montréal:

Name	Organization
Alan Penn	Administration Régionale Crie
Alfred Jaouich	Université du Québec à Montréal, Dépt. des Sciences de la Terre et de l'Atmosphère
André Beauchamp	Centre justice et foi
Christiane Bolduc	Centre d'expertise en matières résiduelles
Denis Leclerc	Chantier Jeunesse
Jean-Guy Vaillancourt	Université de Montréal, Département de Sociologie
Liam Turner	Fasken Martineau DuMoulin s.r.
Louis-René Dessureault	Sirsi Canada
Marie-Claude Bellemare	Fasken Martineau DuMoulin s.r.
Martin Frankland	UNIVERTCITE
Michel Bergeron	Chantier Jeunesse
Michel Groulx	Centre des sciences de Montréal
Vincent Drieu	ENJEU



## 1.4 NEW BRUNSWICK REGIONAL DIALOGUE SESSIONS

The following were in attendance at the NWMO New Brunswick Regional Dialogue Session #1, March 10<sup>th</sup>, 2004 and/or Session #2, April 3<sup>rd</sup>, 2004 at the Fredericton Inn in Fredericton:

Name	Organization
Al Soppitt, Captain	Saint. John Port Authority
Anna Girouard	PODIUM
Beth MacLaughlin	Conservation Council of New Brunswick
Bill Artiss	Enterprise St. John Board of Directors
Brent Smith	Association of Professional Engineers & Geologists of New Brunswick
Daniel LeBlanc	Petitcodiac Riverkeeper
David Thompson	Conservation Council of New Brunswick
Gordon Daizell	Citizens Coalition for Clean Air
Léopold Chiasson	Association Francophone des Municipalités du Nouveau Brunswick
Lucy Wilson	University of New Brunswick, Dept of Physical Sciences
Mark McIntyre	North American Young Generation in Nuclear
Neil Craik	Canadian Nuclear Society
Norville Getty	Union of New Brunswick Indians
Ron Perley	Union of New Brunswick Indians
Susan Farquharson	Eastern Charlotte Waterways Inc
Vern Garnett	World Environmental Defence League
Yvonne Gibb	Union of Municipalities of New Brunswick

## **APPENDIX 2: SUMMARY NOTES SESSION #1**

- 2.1 National Stakeholder Dialogue Session #1
- 2.2 Ontario Regional Dialogue Session #1
- 2.3 Québec Regional Dialogue Session #1
- 2.4 New Brunswick Regional Dialogue Session #1

## APPENDIX 2: SUMMARY NOTES SESSION #1

### 2.1 NATIONAL STAKEHOLDER DIALOGUE SESSION #1

#### NWMO National Stakeholder Dialogue Session #1

**Monday, March 8, 2004**  
**Aristocrat Suite Hotel**  
**141 Cooper Street**  
**Ottawa, Ontario**

#### Summary Notes

#### 1. Participants

The following were in attendance at the National Stakeholder Dialogue Session #1:

Name	Organization
Alex Wood	National Round Table on Environment and Economy
Anna Stanley	Trudeau Foundation
Colin Allan	The Royal Society of Canada
David Shier	Canadian Nuclear Workers Council
Don Wiles	Chemical Institute of Canada
Frank Palmater*	Woodland Metis
Ken Smith	Canadian Nuclear Society
Marc Chenier	Canadian Coalition for Nuclear Responsibility
Mary Lou Harley	United Church of Canada
Michael Earle	Power Workers' Union
Murray Elston	Canadian Nuclear Association
Ray Clark	Transport Canada
Robert Donahue	Canadian Geotechnical Society
Ted Shin	Canadian Standards Association
Valérie Langlois	Youth Round Table on the Environment

\*Attended as an observer

## 2. Overview of Session #1

- The session was held on Monday, March 8<sup>th</sup> at the Aristocrat Suite Hotel in Ottawa, Ontario. There were 14 participants registered as well as Donna Pawlowski representing the NWMO and the DPRA staff. The session began with a presentation by Jim Micak who introduced the agenda and the dialogue process.
- The main presentation was given by Donna Pawlowski who explained the origin of the Nuclear Waste Management Organization, its mandate and recent activities. Donna also explained the current activities with respect to the dialogue and the use of Discussion Document #1. She noted that by November 2005, the NWMO must provide a report with recommendations to the Federal government on a long-term approach for the management of Canada's used nuclear fuel.
- Ms. Rachelle Laurin-Borg presented details on the use of the electronic dialogue.
- Copies of the presentations by Mr. Micak, Ms. Pawlowski and Ms. Laurin-Borg are attached in a .PDF file.

## 3. Asking the Right Question? Has the problem been correctly described?

The balance of the dialogue session focussed on a roundtable discussion on whether the NWMO had characterized the problem facing Canada correctly:

The following is a summary of the main comments which were put forward by individuals, and are grouped by theme. No attempt was made to achieve a consensus or agreement on the various comments. Identified in bracket is the relationship of the comment to one or more of the three components of Discussion Document #1, problem definition, technical methods or analytical framework.

### Energy Policy

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- There were several points regarding the NWMO, its mandate and the future of nuclear energy: The first part of the discussion elicited various views on the nature of the problem.
- One view was that the size of the problem is unknown. If we produce more nuclear energy, and therefore more wastes to deal with in the long run, as opposed to phasing out nuclear energy production, we may reach different conclusions. This relates to the actual source of the problem in terms of how much is being produced and why it is being produced. The future of nuclear energy is important in order to frame the waste management problem and the need to address the source of the problem, specifically, the production of nuclear energy and the production of wastes. (Problem Definition)
- An alternative view is that the quantity of used fuel bundles is not a factor in deciding upon a recommended management scheme. Whether there are 1.6 million bundles, as at present, or 3.6

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million bundles after the current fleet of reactors reach the end of their anticipated operating life, or 10 million bundles at some distant point in the future, the management approach is likely to be the same. (Problem Definition)

- Another expressed view was that the NWMO is not the forum in which to discuss the future of nuclear energy or energy policy but rather has the mandate on to how to deal with the wastes that currently exist and that will be produced in the next 20-30 years. Others countered that even though energy policy is beyond the mandate and scope of the NWMO the issue of the debate on the future of nuclear energy should at least be acknowledged in the NWMO documents. (Problem Definition)
- There is a need to deal with the waste issue as it now exists but in that context, the NWMO can make the recommendation that energy policy be addressed and look at all energy production. It was pointed out that energy policies have been debated nationally and provincially many times and it is the policy of some provinces to develop nuclear energy to meet current energy needs. (Problem Definition)
- The NWMO needs to be clear on its mandate and what it is moving forward to resolve as well as its position on ongoing nuclear energy production. This needs to be reflected in NWMO documents and thinking. (Problem Definition)

### **Safety and Security**

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- The management approach selected must maximize safety and security but yet provide for retrieval if the wastes could be used in the future. (Analytical Framework, Technical Methods)
- This is a very important decision that will have implications for hundreds of years and therefore a quick decision is not necessary in the sense that there is no immediate danger or risk at the moment with the interim storage and there is a period of 30 or 40 years before one would have to make the longer term decision. The implementation of the long-term approach may proceed over an extended period of time. (Problem Definition, Analytical Framework)
- It was noted that one or two Power Corporations (AECL and Bruce Power) are working on ways to use enriched fuels to reduce the amount of wastes that may be produced; this however raises issues in some peoples minds related to handling and security. (Problem Definition, Technical Methods)

### **Social Acceptability and Risks**

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- To find a socially acceptable solution, the approach recommended by NWMO needs to be clear on risk management. What risks can we deal with now and which ones will have to be dealt with by future generations? (Analytical Framework)
- One issue which is not fully addressed is the question of how to assess Social Acceptability. How is it defined and how will a judgment be made that one management option is Socially Acceptable and another is not. (Analytical Framework)

- Any solution would not be the ultimate perfect solution but should deal with the problems we have today and not foreclose options for future generations. (Problem Definition, Analytical *Framework*)

### Nature of the Hazard

- The long-term hazard needs to be better understood and the nature of the hazard needs to be quantified in relative terms and presented in a way that is relevant to Canadian society. For example, is exposure to radioactive wastes better or worse than living next door to a coal mine or next door to a manufacturing facility? (Problem Definition, Analytical *Framework*)
- Gamma radiation is toxic but that the hazard decreases with time at different rates. As time goes by the nature of the risks changes and it is extremely dangerous if it is mishandled. Some argue that there is no safe level of an exposure to radiation. Others argue that low levels of radiation are not at all harmful and may be beneficial. Some suggested that the NWMO would not be able to determine which interpretation is correct, but should accept that low levels of radiation will cause low levels of risk. (Problem Definition)
- It was suggested that a potential health hazard from ingestion, particularly through contamination of water, is a long-term concern. (Problem Definition)
- Canada has sixty years of experience of very good handling and a strong safety record. (Analytical *Framework*)

### Ethics

- Ethical principles need to be defined and applied including our responsibility to future generations. (Analytical *Framework*)
- There are some international principles regarding ethics and these may be used, at least in part, for the selection of the management approach. (Analytical *Framework*)
- Progress is needed now on how to deal with intergenerational responsibilities. (Analytical *Framework*)
- An ethical consideration is that decisions taken today should not preclude future generations taking a different decision. This would imply that retrievability is desirable. It was noted by some participants that geological disposal is consistent with the waste being retrievable, as is storage. (Analytical *Framework*)
- In adopting nuclear energy as an energy source, *some felt that* ethical issues were ignored by decision-makers. (Analytical *Framework*)

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- NWMO Directors are all representatives of owners and the Advisory Council members are appointed by the Board of Directors. Since the NWMO is not "at arms length," Canadians are being asked to trust the industry to make the recommendation on long-term management of nuclear waste. As a first step toward developing trust, it was suggested by some participants that the owners need to change the Board to provide representation of the major stakeholders.
  - The mining of uranium has resulted in over 200 million tons of uranium tailing wastes and that too brings with it its own ethical issues. On the other hand, it was mentioned that the toxicity of uranium tailings are no different from tailings from the mining of other minerals and metals, so the toxicity issue needs to be placed in context.
  - How you deal ethically with future generations must be rooted in ethical principles that are applied in this current process. (Analytical Framework)

### **Factual Basis/Information**

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- It would be helpful to have an established set of facts so participants will all be starting with the same base of knowledge and understanding. It is also important who produces and disseminates the knowledge because not all facts are being presented. Some facts might be agreed to, particularly data, but there are likely to be disagreements over the interpretation of the data. (Problem Definition)
- There is a need for an agreement on a set of facts or at the very least the various perspectives could be put forward so that they can be examined and cross-examined to arrive at a general sense of the facts. Some individuals suggested that such a review should be undertaken by legislative committee, fulfilling a commitment made by the former Minister Jake Epp. (Problem Definition)
- Not enough research has been done on the long-term effects of nuclear wastes and there is a great deal of uncertainty. This was suggested as another way to word the question regarding the effects of low-levels of radiation. (Problem Definition)
- One question asked was how much information does the NWMO need to have or know to move forward with the recommendation? Is there a knowledge threshold? (Analytical Framework)
- While there may be agreement with the data, there may be disagreement with the interpretations and it might be necessary to agree to disagree in order to move on with the management of the wastes that do exist. (Problem Definition)
- There are international consensus documents on exposures to *low levels of radiation* and these should be circulated. In addition, all information including other points of view should be presented as clearly as possible to the public and participants in this process to help develop a full understanding. (Analytical Framework)

- While there is uncertainty, having some facts would be useful even if we do not totally agree on interpretation. It was suggested that a process to identify areas of disagreement all define gaps or knowledge is applied in other environmental issues and may be useful in this issue. (Problem Definition)
- It was pointed out that the Canadian Standard Association is in the process of developing certain nuclear standard programs with standards for application and that since CSA is an independent third party, their involvement in such processes may help in terms of providing a degree of independence and balance.

### **Discussion Document #1**

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With respect to the document, “Asking the Right Questions?”, the following comments were made:

- 1) The information presented is sometimes confusing and/or in some cases, misrepresenting facts.
- 2) The document generally bounds the problem in an acceptable manner but a number of sub-issues could be better explained.
- 3) Also critical areas on the nature of the hazard are not presented, such as harm from ingestion or inhalation of radioactive material, the potential health hazard over time, and the time-frame of concern.
- 4) Some details were lacking, for example, there is nothing on emergency response requirements.
- 5) The framework for decision-making in the process for going forward does not seem to be understandable. The actual framework and decision-making process have not yet been defined.
- 6) Other nuclear wastes are not mentioned - such as the uranium tailing ponds, low-level waste at Port Hope, etc.
- 7) The management of used nuclear fuel is a problem of a long-term nature i.e. something that will be around for 500 years or more and we really do not have the experience or knowledge to fully understand the long-term nature of the problem and how to effectively address it, organizationally or otherwise. This should be acknowledged by the NWMO.
- 8) The document is not written to be easily understandable to the average person.

### **Follow-up Actions**

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- NWMO will provide hard copies of p. 92 of “A Race Against Time” Royal Commission for Electric Power Planning (Final Report), addressed the issue of toxicity of used nuclear fuel increasing over time.



- Distribution of National Stakeholder participants list to dialogue participants.
- Distribution of draft agenda for Session #2.

### **Status of Notes**

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These are the final summary notes of Session #1 and are not intended to represent a verbatim transcript.

## 2.2 ONTARIO DIALOGUE SESSION #1

### NWMO Ontario Regional Dialogue Session #1

Thursday, March 4, 2004

Best Weston Hotel

700 Lakeshore Drive

North Bay, Ontario

#### Summary Notes

### 1. Participants

The following were in attendance at the Ontario Regional Dialogue Session #1:

Name	Organization
Brennain Lloyd	Northwatch
Derek Paul	University of Toronto, Department of Physics
Dougall McCreath	Laurentian University, School of Engineering
Frank Palmater	Ontario Metis Aboriginal Association
Jack Falkins	Ontario Metis Aboriginal Association
Janice Matichuk	Atikokan Citizens for Nuclear Responsibility
John Coupland	Thunder Bay Emergency Measures Organization
John Jackson	Ontario Environmental Network
Jose Freire-Canosa	Society of Energy Professionals
Linda Cunningham	Federation of Northern Ontario Municipalities
Phillip Penna	Canadian Uranium Alliance
Roy Hains	Ontario Northland Transportation Commission
Lynn Ann Lauriault	Social Planning Council
Ido Vettoretti	Ontario Public Health Association

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## 2. Overview of Session #1

- The session was held on Thursday, March 4<sup>th</sup> at the Best Western Hotel on Lakeshore Drive in North Bay. There were 15 participants registered as well as Donna Pawlowski representing the NWMO and the DPRA staff. The session began with presentation by Jim Micak who introduced the agenda and the dialogue process.
- The main presentation was given by Donna Pawlowski who explained the origin of the Nuclear Waste Management Organization, its mandate and recent activities. Donna also explained the current activities with respect to the dialogue and the use of Discussion Document #1. She noted that by November 2005, the NWMO must provide a report with recommendations to the Federal government on a long-term approach for the management of Canada's used nuclear fuel.
- Regarding the Dialogue Process Expectations and Guidelines, it was requested that Item No. 8 be expanded to include a reference that attendance in the dialogue is not deemed to be consultation with the Ontario Metis Aboriginal Association.
- Ms. Rachelle Laurin-Borg presented details on the use of the electronic dialogue. Copies of the presentations by Mr. Micak, Ms. Pawlowski and Ms. Laurin-Borg are attached in a .PDF file.
- The remainder of the session focussed on discussion related to the Discussion Document #1 called "Asking the Right Questions?".

## 3. Asking The Right Questions – Has the problem been correctly described?

The balance of the dialogue session focused on a roundtable discussion on whether the NWMO had characterized the problem facing Canada correctly.

The following is a summary of the main comments, which were put forward by individuals, and which are grouped by theme. No attempt was made to achieve a consensus or agreement on the various comments. Identified in bracket is the relationship of the comment to one or more of the three components of Discussion Document #1, problem definition, technical methods or analytical framework.

### Energy Policy

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- There was general discussion about nuclear energy and particularly whether or not nuclear energy should be permitted or promoted as it is by the Federal government and the three Provincial governments. (Problem Definition)
- There is some unease with the fact that the NWMO, while reporting to the Federal government is funded and supported by the nuclear power plant owners. The NWMO does not have an arms length and independent relationship to give it credibility and assure a balanced examination of the problem, and possible solutions. (Problem Definition)

- 
- Society has to grapple with very large issues, particularly energy consumption and how much energy we need and how we will wish to produce it. (Problem Definition)
  - Other government policies (e.g. Kyoto) will have an influence on the decisions Canadians make on energy policy. The question of energy policy and mix of energy options cannot be addressed in isolation but only in an integrated way. (Problem Definition)
  - We need to understand the relationship between the energy use and waste production. Canadians must understand the true cost of using energy. This may require us to refocus our efforts on conservation and need to recognize if power costs go up, this could have social costs in terms of other aspects of society. (Problem Definition)
  - The problem of the production of the nuclear wastes and the need to manage these wastes exists irrespective of the long-term future of nuclear energy. While there should be a discussion of broad energy issues and policy options, this is outside the terms of reference of the NWMO. (Problem Definition)

### Scenarios

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- There was a question of what is the actual problem the NWMO is addressing. Solution would vary with different scenarios, i.e. the best solution may be different if nuclear energy is phased out as opposed to nuclear energy being expanded. (Problem Definition)
- A scenario approach might be a useful way of examining the options and developing criteria for comparison of management approaches. The scenarios suggested were:
  - phase out/decrease nuclear energy
  - maintain a steady state (the current situation)
  - expand nuclear energy production ((Problem Definition, Analytical Framework)

### Safety and Security/Precautionary Approach

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- Nuclear waste is toxic and in the wrong hands can be misused. We need to find the best way to keep it secure and protect the population from inadvertent exposure or its potential misuse (i.e. terrorism). (Problem Definition)
- NWMO must adopt the precautionary approach as an important consideration in both developing and comparing waste management approaches. The precautionary principle means in the absence of information, no actions should be taken that may result in possible harm to people and the environment. (Analytical Framework)
- We must be practical and do the best with what we know now. This means finding a way to deal with the nuclear waste in a precautionary way so that wastes can be securely managed. (Analytical Framework)
- Some felt that it would be safer to store underground than aboveground. Others felt that storage should be above ground so it can be effectively monitored. (Technical Methods)

- One question focussed on who would be responsible for liability in the event of a failure/accident at a management facility/transport. This is a matter that should be considered and addressed in the next phases of the NWMO work.

### **Technology**

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- We do not have full knowledge of the impact of future technology and therefore management should be done in such a way that it will permit retrieval if future generations develop the technology that could find alternate uses for the waste materials or neutralize the hazard of the wastes. (Problem Definition, Analytical Framework)
- An associated comment pertains to whether the used fuel is to be considered as a waste or a future resource that might be used in Canada or elsewhere as an energy source.

### **Ethics**

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- From an ethical perspective, we need to pay attention to not only seven generations (as stressed by Aboriginal people) but even beyond that for many more generations. (Analytical Framework)
- Given the toxicity of the wastes (i.e. we need to safely deal with it for thousands of years), we must take action, we must not burden future generations to deal with the problem. (Problem Definition)
- The management of nuclear wastes is a significant social problem and that we need to find an approach that is socially acceptable. NWMO must present an approach that will address most people's concerns and fears that whatever the solution it would not be harmful to future generations. (Analytical Framework)
- There was recognition that anything that is unknown is perceived as dangerous and therefore, it is important to ensure that risks are properly addressed. "Nuclear dread" issues have resonated well in the public and therefore, the risks must be very clearly articulated to the public at their level of understanding. We need broader and clearer risks communication in the public dialogue. (Analytical Framework)

### **Consultation**

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- There was a question regarding the time and form of consultation by the Government of Canada prior to making a decision on the management approach. This is a matter that has yet to be determined by the Government.

### **Discussion Document #1**

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- The information in Discussion Document #1 was not particularly user-friendly or understandable to the average person.
- There was no reference to any legal requirements in the Analytical Framework.

- 
- There was a sense that NWMO was not providing a balanced picture in the information being presented. Various points of view on nuclear energy and management of nuclear wastes should be acknowledged and presented.
  - NWMO credibility would be enhanced if the NWMO acknowledged the fact that there is a lot of uncertainty that goes with developing an approach for the management of nuclear waste.

### **Electronic Dialogue**

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- A participant enquired as to how long the NWMO would keep the electronic dialogue comments.

### **Session 2 (Scheduled For March 27<sup>th</sup>)**

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- Session 2 will focus on the technical methods and analytical framework questions.
- Suggestions from the participants were: (1) the agenda should be out in advance prior to the session; (2) there should be some kind of social activity before the all day workshop. Possibly, a social the evening before (Friday night) or a joint breakfast on the Saturday.

### **Follow-up Actions**

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The following are the action items from this session:

- Distribute list of Ontario Dialogue participants.
- Confirm how long the e-dialogue comments will be kept.
- Amend Dialogue Expectation #8, i.e. that dialogue is not to be deemed as consultation with the Ontario Metis Aboriginal Association.
- NWMO to provide further details on the selection of the participants for the Ethics Workshop held by NWMO.
- A draft agenda for Session #2 to be distributed to dialogue participants.

### **Status of Notes**

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These are the final summary notes of Session #1 and are not intended to represent a verbatim transcript.

## 2.3 QUÉBEC DIALOGUE SESSION #1

### SGDN Dialogue régional du Québec; session 1

**Hyatt Regency de Montréal  
1255 Jeanne-Mance  
Montréal, Québec**

#### 1. Participants

Les participants suivants ont assisté à la première session du Dialogue régional du Québec :

Nom	Organization
André Beauchamp	
Marie-Claude Bellemare	Fasken Martineau DuMoulin s.r.
Michel Bergeron	Chantier Jeunesse
Christine Bolduc	Centre d'expertise en matières résiduelles
Louis-René Dessureault	Sirsi Canada
Vincent Drieu	ENJEU
Martin Frankland	UNIVERTCITE
Michel Groulx	Centre des sciences de Montréal
Alfred Jaouich	Université du Québec à Montréal, Dépt. des Sciences de la Terre et de l'Atmosphère
Alan Penn	Administration Régionale Crie
Liam Turner	Fasken Martineau DuMoulin s.r.
Jean-Guy Vaillancourt	Université de Montréal, Département de Sociologie

#### 2. Remarques générales sur la rencontre

Le présent document fait état des discussions qui ont eu lieu lors du « dialogue régional du Québec » tenu le mardi 9 mars 2004 à l'hôtel Hyatt Regency de Montréal. Au total, 18 personnes étaient présentes au dialogue, parmi lesquelles :

- 12 citoyens ou représentants d'organismes divers
- Donna Pawlowski, représentant de la SGDN
- 5 personnes de l'équipe d'animation de la firme DPRA.

Anita Ramacière ouvre la session en présentant le déroulement et le processus du dialogue.

La présentation principale est donnée par Donna Pawlowski qui a mis en contexte:

- Un portrait du nucléaire au Canada : production, gestion des déchets, sites d'enfouissement, approche, historique.
- Le mandat de la SGDN
- Les engagements de la SGDN pour 2004
- Les enjeux du nucléaire au Canada
- Les méthodes proposées:
  - La terminologie
  - Les méthodes techniques
  - Le cadre d'analyse

Rachelle Laurin-Borg présente le dialogue électronique.

### **3. La problématique: Posons-nous les bonnes questions?**

La discussion a permis de dégager trois thèmes qui ont servi à regrouper les interventions des participants.

- a. Élargir le débat
- b. Miser sur le potentiel des ressources
- c. Ne pas introduire de biais

- Trois considérations additionnelles ont également été soulevées
- Enfin, les participants ont souhaité recevoir de l'information complémentaire sur certains sujets.

#### **Élargir le débat**

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- Tout en restant ouvert à des questions plus larges qui viendront enrichir ce dernier, on doit accepter les limites du mandat tel qu'il a été confié à la SGDN
- Apprendre des expériences antérieures menées au Canada et ailleurs dans le monde
- Prendre en considération les traités internationaux (et inter provinciaux) existants ou à développer pour assurer une gestion globale – voire mondiale – des déchets. Dans cette perspective, faire du problème du transport des déchets une composante de la problématique.
- La problématique de la gestion des déchets nucléaires doit être considérée dans l'ensemble global qu'est la politique énergétique, et ce, à l'échelle provinciale autant que fédérale, car les provinces sont directement concernées. Comment tenir compte des différentes juridictions?



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- Au fil de l’histoire, chaque province a fait ses choix énergétiques en fonction de ses ressources naturelles et de choix politiques en matière d’énergie. L’Ontario étant le plus gros producteur d’énergie nucléaire, dans quelle mesure la problématique n’est-elle pas une question ontarienne ?
  - Prendre en considération les coûts des solutions envisagées.
  - Tenter de trouver une solution qui soit acceptable sur le plan social et sur le plan environnemental.
  - Tenir compte de l’importance d’établir les compétences juridictionnelles. Envisager la problématique comme une problématique à l’échelle canadienne dans le cadre de la fédération canadienne.
  - Le problème n’est jamais posé en terme de consommation et d’économie d’énergie.
  - La question telle que posé, il est impossible d’inclure la réduction des déchets nucléaires.
  - Le débat doit aussi être élevé à un niveau philosophique.

### **Miser sur le potentiel des ressources**

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#### **Formation**

- Veiller à la disponibilité des ressources humaines à court, moyen et long terme.
- Se poser dès maintenant la question du potentiel humain en matière de production et de gestion de l’énergie nucléaire et des déchets qui en résultent.
- À cet effet, créer ou développer des programmes universitaires spécialisés de haut niveau.

#### **Recherche et développement**

- Investir dans la recherche et développement et dans les nouvelles technologies.
- Miser aussi sur le potentiel des solutions émergentes autant que des solutions à venir, incluant celles inimaginables aujourd’hui.
- Miser sur les nouvelles technologies dans une perspective de développement durable.

#### **Accessibilité sociale**

- Mettre en place des processus d’information et de sensibilisation du grand public à la réalité du nucléaire au Canada de manière à encourager les citoyens à amorcer une réflexion personnelle et collective sur le sujet.

- On peut déjà observer une évolution des mentalités. L'émergence du concept de cycle de vie en est notamment une preuve.

### **Ne pas introduire de biais dans la réflexion**

#### **Notion de durée**

- Il est nécessaire de tenir compte du fait que l'on produit aujourd'hui des impacts potentiels pour des générations qu'on ne connaîtra jamais, et qui évolueront probablement dans des civilisations différentes de la nôtre.
- Dans cette perspective, il est important de trouver une solution au stockage des déchets qui ne soit pas définitive, et qui permette d'y avoir accès à long terme. En un mot, il s'agit de poser la question de la gestion des déchets dans le temps et de l'envisager au-delà de l'échelle humaine, sur une échelle temporelle presque infinie.

#### **Restrictions**

- Tout au long de la démarche, on devra s'imposer de ne pas mettre de limites ou de barrières à la réflexion, par exemple :
  - Statuer sur le fait qu'il n'existe probablement pas de solution acceptable
  - Ne pas s'imposer la limite d'une solution unique
  - Affirmer que le Canada risque de devenir un dépotier nucléaire s'il trouve LA solution au problème de gestion des déchets nucléaires.

### **Plusieurs autres considérations ont été soulevées, en particulier :**

- Les participants ne semblent pas partager une vision commune de la problématique. Ce phénomène est lié notamment :
  - À la différence des niveaux de connaissance des éléments de la problématique posée et du nucléaire en général
  - Aux différences d'appréciation de l'importance relative des différents éléments du cadre d'analyse soit : les aspects sociaux, environnementaux, économiques et techniques.
- Ces différents éléments ne sont pas pondérés ni hiérarchisés.
- Afin d'éviter la confusion dans la définition de certains concepts, la terminologie utilisée doit être clairement définie

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**Quelques informations complémentaires que les participants aimeraient connaître :**

- À long terme, comment se comporte un déchet nucléaire irradié ?
- Tableau récapitulatif des avantages et inconvénients des solutions proposées (au niveau technique, écologique, économique, effets sur l'environnement et sur la santé etc.)
- Lister les critères d'évaluation des questions afin que chaque participant puisse les hiérarchiser
- Exposer les bénéfices de l'énergie nucléaire
- Tour d'horizon des expériences et conclusions d'études menées au Canada et ailleurs dans le monde (succès, échecs)

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**Veillez prendre note que :**

- Le présent rapport n'est pas une transcription intégrale des discussions. Les erreurs, omissions ou points d'éclaircissement seront reçues à la prochaine rencontre.
- Les différentes présentations sont disponibles sur demande en format PDF.

## 2.4 NEW BRUNSWICK DIALOGUE SESSION #1

### NWMO New Brunswick Regional Dialogue Session #1

Wednesday, March 10, 2004

Fredericton Inn

1315 Regent Street

Fredericton, New Brunswick

#### Summary Notes

### 1. Participants

The following were in attendance at the NWMO New Brunswick Regional Dialogue Session #1:

Name	Organization
Al Soppitt, Captain	Saint. John Port Authority
David Thompson	Conservation Council of New Brunswick
Gordon Dalzell	St.. John Coalition for Clean Air
Leopold Chiasson	Association Francophone des Municipalites du Nouveau Brunswick
Lucy Wilson	University of New Brunswick, Dept of Physical Sciences
Mark McIntyre	North American Young Generation in Nuclear
Neil Craik	Canadian Nuclear Society
Susan Farquharson	Eastern Charlotte Waterways Inc
Beth MacLaughlin	Conservation Council of New Brunswick
Anna Girouard	PODIUM
Norville Getty	Union of New Brunswick Indians

### 2. Overview of Session #1

- The session was held on Wednesday, March 10<sup>th</sup> at the Fredericton Inn in Fredericton, New Brunswick. There were 11 participants registered as well as Donna Pawlowski representing the NWMO and the DPRA staff. The session began with a presentation by Constance Ramacière who introduced the agenda and the dialogue process.
- The main presentation was given by Donna Pawlowski who explained the origin of the Nuclear Waste Management Organization, its mandate and recent activities. Donna also explained the current

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activities with respect to the dialogue and the use of Discussion Document #1. She noted that by November 2005, the NWMO must provide a report with recommendations to the Federal government on an approach for the long-term management of Canada's used nuclear fuel.

- Ms. Rachelle Laurin-Borg presented details on the use of the electronic dialogue.
- Copies of the presentations by Ms. Ramacière, Ms. Pawlowski and Ms. Laurin-Borg are attached in a .PDF file.

### **3. Asking the Right Question? Has the problem been correctly described?**

The balance of the dialogue session focused on a roundtable discussion on whether the NWMO had characterized the problem correctly.

The following is a summary of the main comments, which were put forward by individuals, and are grouped by theme. No attempt was made to achieve a consensus or agreement on the various comments.. Identified in bracket is the relationship of the comment to one or more of the three components of Discussion Document #1, problem definition, technical methods or analytical framework.

#### **Energy Policy**

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There was general discussion regarding the continued use of nuclear energy as part of the energy option mix.

- Nuclear energy and nuclear wastes was viewed by some participants as representing risks to human health and the environment. Concerns were expressed regarding the potential for radiation exposure and the uncertainty of the potential effects several hundreds of years into the future. By continuing to produce nuclear energy and therefore nuclear wastes, this generation will leave a significant problem for future generations. (Problem Definition)
- Another view was that nuclear energy represented safe, reliable and an environmentally acceptable energy opportunity. In particular, some participants felt that nuclear energy was an attractive option when one considers the climate change issue and the potential contribution of nuclear energy to addressing climate change. (Problem Definition)

#### **Future Use of the Used Nuclear Fuel**

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- There was some support and interest for the concept of the future use of the used nuclear fuel. Unused energy within the used fuel could be retrieved in the future. It was suggested that Canada should play a leadership role in research and development of technology to make use of the remaining energy. Regarding this matter, it was noted by one participant that the Organization for Economic Development (OECD) has published a report that examines six methods of reducing radioactivity and using the energy that remains in the used nuclear fuel. Almost 20 countries were participating in this research effort; however, Canada did not appear to be a participant. (Problem Definition, Technical Methods)

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- An alternate view was expressed by some that Canada should not consider reprocessing of wastes. The risk associated with handling and transport of these wastes for reprocessing are significant. Further, costs associated with the reprocessing of wastes could be allocated to the research and implementation of alternate energy sources including wind power and other renewable technologies.
  - The future management approach for the used nuclear fuel should include the ability to retrieve or access the waste material. With technological advancements, retrieval would allow future generations to either use the remaining energy potential or neutralize the remaining hazard and risk. (Problem Definition, Analytical Framework)
  - Nuclear energy should not equate waste.
  - Canada should play a lead role in research and development for the potential reuse of these wastes. We should not leave this to others, Canada should drive technological advancement.

### **Safety and Security/Precautionary Approach**

- There is a concern about our ability to keep the used nuclear fuel secure over both the short and long-terms. Any method selected must ensure that the used nuclear fuel containment is not breached by people or nature. With climate change and the long-term unpredictability of nature, there may be the potential for significant weather events, any management method needs to consider this potential. (Analytical Framework)
- NWMO should assess the relevance of the precautionary principle as expressed in the Canadian Environmental Protection Act and determine if it has a role in the Analytical Framework.
- Used nuclear fuel should be handled as little as possible. Handling the waste material and transporting the material increases the potential for accident. Security of the nuclear waste (short and long term) must be a major consideration in the development of a management approach. (Analytical Framework, Problem Definition)

### **Ethics**

- How we can predict what society will be like in the future and how it might respond to the need to continue to manage these wastes? This is a problem that we cannot leave for the future, we need to identify ways to address future responsibility today. (Problem Definition, Analytical Framework)
- This generation has an ethical responsibility to solve this problem regardless of whether nuclear energy production is phased out, the wastes exist, we have to manage these wastes. (Problem Definition)
- There are too many unknowns regarding future health effects, caution is therefore required. (Analytical Framework)

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- A key question that needs to be answered is which ethical framework is to be adopted. Whose values are to be used to shape the framework? Whose ethical philosophy do you use in a pluralistic society? The NWMO ethics advisory panel may not be representative of the various ethical systems from a religious perspective.

### Summary

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- We should consider this to be an opportunity.
- Health is a key concern both environmental and human.
- Unpredictability of nature needs to be factored in (climate change and it's impact on maritime provinces).
- We need to drive Research and Development.
- Security – safety – are paramount but we should not cross the line (a police state).
- Interconnectedness of the problem should be part of the analyses.
- A change of paradigm is required.
- Nuclear should not equate waste.
- Canada must take its place at the international table, and fulfill its responsibilities to third world countries.
- We can't know what society will look like in 200 years; we need to take responsibility now.
- We need to deal with it.

### Other Matters

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- It was noted by one participant that there is a certain way to dialogue with Aboriginal people. Suggestions have been made to the NWMO on this matter, these meetings are not consultations as far as the Aboriginal community is concerned.
- Some groups are not included in this dialogue, social action groups, sustainable development groups and religious interests. A question was raised whether in the absence of the participation of such groups, is the NWMO dialogue process meaningful? One participant also inquired whether political representatives from municipalities had been invited. DPRA responded that no political representative was invited, rather invitations were extended to provincial municipal associations.
- Jim Micak described the recruitment process and noted that several participants were unable to attend Session #1 but are expected to participate in Session #2.
- It was agreed that the list of dialogue participants would not be released to the press.

- One participant inquired why the dialogue was not held in Saint John. Jim Micak replied that this was a regional dialogue with participation of interests from across the Province. Given this focus, it was felt that Fredericton was a suitable location. A discussion was held regarding whether the session should be moved, and it was agreed that the second session should remain in Fredericton.

### **Follow-up Actions**

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- Distribute participants list to all participants.
- NWMO to advise as to how many used fuel bundles can be stored in wet bays at Point Lepreau.
- Hard copies of the e-dialogue will be provided to David Thompson.
- NWMO will get back to a participant regarding his inquiry whether NWMO can reimburse typing expenses for his group's submission.

### **Status of Notes**

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- These are the final summary notes of Session #1 and are not intended to represent a verbatim transcript.



## **APPENDIX 3: SUMMARY NOTES SESSION #2**

- 3.1 National Stakeholder Dialogue Session #2
- 3.2 Ontario Regional Dialogue Session #2
- 3.3 Québec Regional Dialogue Session #2
- 3.4 New Brunswick Regional Dialogue Session #2

## APPENDIX 3: SUMMARY NOTES SESSION #2

### 3.1 NATIONAL STAKEHOLDER DIALOGUE SESSION #2

#### NWMO National Stakeholder Dialogue Session #2

Thursday, March 25, 2004

Aristocrat Suite Hotel

Ottawa, Ontario

#### Summary Notes

#### 1) Participants

The following were in attendance at the National Stakeholder Dialogue Session #2 – March 25, 2004:

Name	Organization
Alex Wood	National Round Table on Environment and Economy
Catharine Laidlaw-Sly	National Council of Women of Canada
Colin Allan Dr.	The Royal Society of Canada
David Martin	Sierra Club of Canada
David Shier	Canadian Nuclear Workers Council
Don Wiles, Dr.	Chemical Institute of Canada
Jelena Golic	National Women's Associations of Canada
Ken Smith	Canadian Nuclear Society
Mary Lou Harley Dr.	United Church of Canada
Michael Earle	Power Workers' Union
Michèle Provencher	Transport Canada
Murray Elston	Canadian Nuclear Association
Paul Bates	Canadian Standards Association
Peter Dyne	Consumers Council of Canada
Robert Donahue Dr.	Canadian Geotechnical Society
Sophie Theriault	Trudeau Foundation
Valérie Langlois	Youth Round Table on the Environment

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## 2) Overview of Session #2

This was the second session of the National Stakeholder dialogue on NWMO Discussion Document #1 – Asking the Right Questions?. The first session of the National Stakeholder Dialogue was held on March 8, 2004 and focussed on the nature of the problem facing Canada regarding the long-term management of used nuclear fuel.

Session #2 focussed on the remaining components of Discussion Document #1, specifically:

- Key Terms and Definitions
- The Range of Possible Technical Methods
- The Proposed Analytical Framework

Presentations on all three components were provided by Donna Pawlowski of the NWMO. Session #2 was facilitated by Jim Micak of DPRA consultants.

The dialogue session focussed, in a roundtable discussion, on three key questions:

- **Terms and Definitions** – Are the key terms and definitions regarding the technical methods and management approach clear, understandable and appropriate?
- **The Technical Methods** – Is the characterization of technical methods appropriate? Should other technical methods be considered in the study beyond the three required by legislation? If so, on what basis?
- **The Analytical Framework** – Does it capture the key issues? What changes should be considered? Is it comprehensive?

Following is a summary of the main comments that were put forward by individuals as they reflected on these different discussion areas. No attempt was made to achieve a consensus or agreement on the various comments. Where agreement was evident, it is noted.

## 3) Discussion on Key Terms and Definitions

Dialogue participants were asked to consider five key terms and definitions presented in Discussion Document #1. The key terms are:

- ? Technical Method
- ? Disposal
- ? Storage
- ? Treatment
- ? Management Approach

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**(a) Technical Method**

- Indicate which technical methods have been actively investigated and which haven't. This applies, particularly, to the methods of limited interest.

**(b) Disposal**

- There was considerable discussion on the definition of disposal. Some expressed the view that disposal means – it is gone – there is no intention of retrieval and no commitment to monitoring and/or management. Any method meeting this definition is a disposal method – the key points are no intention of retrieval and no commitment to management.
- Another expressed view was that the definition was clear – regardless of the method, if there is no intention of retrieval and no commitment to management, disposal becomes the final fate – if there is an intent or possibility for retrieval, the method is storage (either passive or active management).
- It was suggested by one participant that definition of deep geologic disposal should emphasize that this method is designed to be “passively safe”. This means that there is no need to retrieve for safety purposes and monitoring could stop after a period of time. However, this does not preclude retrieval for other purposes. Several responded that they would consider this to be storage, since the fate of the wastes is not final, any commitment to monitoring and potential retrieval implies storage. In addition to deep geologic disposal, a possible technical method is deep geologic storage.
- One participant reminded the group of a comment made at the session one. The definition of disposal used by the NWMO was at the Seaborne Panel hearings AECL made that, although there would be intention to retrieve the waste, deep geological disposal as studied by AECL and described in its EIS did not preclude the possibility of retrieving the waste; that retrievability during the operational phase was a regulatory requirement and that retrieval would be possible even after closure of the facility.
- Several participants argued that a method does not become disposal until a facility is closed and management ceases. It was suggested that given this, there is a need to consider a step-wise decision-making process within the long-term management approach. This implies periodic review and evaluation of circumstances. Depending on the circumstances, the status of a method could change from storage to disposal. This would be a future decision based on new information.
- It was suggested that the definition of disposal was not a problem, but how the definition is applied within the management approach is important.
- Others suggested that the term disposal should not imply that there would be no oversight or controls.
- Several participants noted that ultimately ethics will play an important role in determining whether or not deep geologic disposal or deep geologic storage is possible. The ethical issue is whether there will be a society capable of managing stored wastes 1,000 years from now. Ethics needs to be

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factored in the assessment of methods, especially to determine the merits of disposal against the merits of long-term storage.

- It was suggested that the description of methods should formally distinguish between deep geologic disposal and deep geologic storage as two different methods.

#### **(c) Storage**

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- Generally, the participants found the definition for storage to be appropriate. It was understood that storage implies a commitment to on-going management of the wastes.

#### **(d) Treatment**

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- From a definitional perspective, participants found the NWMO definition for treatment as appropriate.

#### **(e) Management Approach**

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- Few comments were provided on the definition of the management approach.
- It was suggested that the management approach should recognize and anticipate a step-wise approach to the management of wastes. Essentially, this might mean storage for a period of time, re-evaluation and establishing new directions based on new information and/or technical advancements.

#### **(f) Other Observations**

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- The presentation of key terms raised a discussion over the key distinguishing elements, some suggested that it was more a discussion of the attributes of active versus passive safety; others suggested that the distinguishing elements were methods that require further management and those that permit, but do not require further management.

### **4) Basis for Determining Whether to Study Technical Methods**

After a presentation on the technical methods, the participants were asked to consider the range of technical methods presented in Discussion Document #1 – Chapter 4, specifically whether a rationale existed for the NWMO to study technical methods other than the three required to be studied by legislation (deep geologic disposal, on-site storage, centralized storage). Participants were asked to provide comments on two groups of methods:

- (a) Technical Methods of Limited Interest
- (b) Technical Methods Receiving International Attention

#### **(a) Methods of Limited Interest**

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There was wide agreement among the participants that many of the methods of limited interest ought not be studied by the NWMO. The discussion focussed on the following:

- If a method has been used, this should be reflected in the description including where and when used.

- All technical method descriptions should include how much research on the method has been done.
- Methods should not be studied if there are unknown predictable risks and extra costs.
- Methods should not be studied if there is a loss of control of the material, and or inability to predict the consequences/fate of radioactivities.
- All agreed that the dispersion and dilution method was unacceptable. The potential risk to human health and environment is too great. To use this method would be irresponsible.
- There was general agreement that any method that contravenes international laws, treaties and conventions should not be considered. It was proposed, even though some countries have investigated sea disposal, that seabed disposal, disposal at sea and disposal in ice sheets would violate international agreements and, on that basis, should not be considered.
- Space disposal was viewed as impractical. Not only is it undesirable from a risk perspective, in the event of an accident, the cost to process the wastes for space disposal is prohibitive.
- Several of the methods have no proven record of performance. In absence of this information, the method should not be studied until additional information is available. Decisions need to be based on available technologies and reasonably practicable.
- No participant suggested that any of the methods of limited interest should be studied by the NWMO at this time.

#### **(b) Methods Receiving International Attention**

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- Generally, participants agreed that reprocessing, partitioning and transmutation of the used nuclear fuel was not practical at this time. These methods were generally considered to be challenging from a technological perspective, costly and represents potential for increased risk as a result of handling and reprocessing. Both reprocessing and transmutation would produce a residual waste stream requiring management. Reprocessing poses an additional risk, in that enriched uranium could fall into the wrong hands and could be used for the development of weapons.
- It was acknowledged that as a result of technological advancements, reprocessing may offer potential in the future and that the NWMO should maintain a watching brief on technological advancements and periodically re-evaluate as new information becomes available. This was expressed as being consistent with the step-wise decision-making approach to the long-term management of wastes.
- The watching brief should pay particular attention to advancement regarding transmutation.

- There were concerns expressed regarding the consideration of storage/disposal at an international repository. From an environmental stewardship perspective, one participant suggested it was preferable for Canada to manage its own wastes. Wastes should be managed where produced, therefore no import or export of wastes.
- Other participants cited the potential for political interference disrupting a management approach. It was noted that relationships between countries change over time. Relying on someone else to meet your waste management needs means uncertainty. The potential closing of the U.S. border to solid wastes from Toronto was cited as an example.
- There was discussion on whether Canada has a responsibility to repatriate wastes from exported CANDU reactors. Some expressed opposition to this citing as a principle that the used fuel should be managed where produced, others suggested that Canada might have an ethical responsibility to client countries to help them manage the used fuel.
- One participant suggested that emplacement in deep boreholes might be attractive from a risk perspective. Placement of small quantities in deep boreholes at the reactor sites distributes a smaller risk over a greater area. Others suggested that this was another form of deep geologic disposal and may have merit for further study as a variation of deep geologic disposal.

## 5) The Analytical Framework

The participants were asked to provide comments on the proposed NWMO analytical framework. Specifically, the discussion focussed on whether the Key Questions and supporting considerations were complete, their significance and any proposed modifications or clarifications. In addition, participants were asked whether the Analytical Framework was comprehensive.

### (a) General Comments

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- Several participants felt that the ten key questions are comprehensive and represent the important matters that need to be considered when developing and comparing management approaches.
- Many of the considerations need to be defined or explained. The wording provided is not often clear as to intent, meaning and application. Further, it was suggested that many of the considerations need to be re-written so that they will be easy to understand.
- While many of the considerations seem to be worthwhile, it was not clear how the NWMO would implement or operationalize. For example, “ensuring a fair sharing of costs” – How will this be determined? How is it practically applied? and on what basis?. More information is required.
- Concerning the overarching aspects – Key Questions 1-5, there were different opinions as to whether all are in fact overarching. Some expressed the view that Q1-Institution and Governance and

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Q2 – Engagement and Participation in Decision-Making were not overarching. The majority view was that they were.

- Considerable discussion focussed on whether some of the overarching aspects were more important than others. Several participants felt that Ethical Considerations (Q4) was of primary significance and sets a context for the remaining four overarching aspects. Some of the aspects might be more interconnected than others. For example, ethics should influence how the engagement and participation in decision-making considerations are developed and applied.
- There was discussion concerning the relationship between the Aboriginal values (Q3) and Ethical Considerations (Q4). It was suggested that a clear linkage should be made between the two, in particular, the consideration of Aboriginal values can help to inform and help shape the ethical considerations.
- Others felt that there should be no priority among the overarching aspects – all are important and all need to be considered in developing and selecting a management approach.
- A set of ethical principles from the United Church of Canada was circulated and its application in the past to nuclear waste issues was used to illustrate how an ethical framework could help guide NWMO activities and decisions.
- A paper from the Sierra Club of Canada regarding its position on the future of nuclear energy was circulated.

The following are specific comments on each of the ten key questions that make up the Analytical Framework:

### **Q1 – Institutions and Governance**

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- For what length of time does a management system need to be in place? A definition should be provided for what is meant by “for many years to come” – does this mean for 50 years, in perpetuity or some other period of time? – remove the ambiguity.
- Some questioned whether “voluntary programs and market incentives” (bullet #1) are appropriate as methods of governance.
- Laws and standards are dynamic, reflect this in the text. Laws and standards – some are in place, some will need to be developed, the management framework will need to be clear.
- It is not clear what is meant by cultural norms (bullet #1).
- There needs to be provision for independent organizations to monitor activities related to the management approach.



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## **Q2 – Engagement and Participation in Decision-Making**

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- Add: - ‘a commitment to full disclosure to the community of risks and uncertainties’.
- Add: - ‘a commitment to independent or third party oversight of the management approach’ – the intent is to assure an independent perspective.
- Humility should be referenced.
- There was a concern that this aspect only spoke to once the solution is implemented, not before.
- This discussion doesn’t get to the practical realities of consultation and engagement.
- Will never get voluntary consent, it’s a good word but what does it mean?
- What is community, how will it be defined, who determines this?

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## **Q3 – Aboriginal Values**

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- A question was raised as to how the NWMO would reconcile the basic Aboriginal view that humanity is part of nature, while in Genesis – man shall have dominion over nature – suggested that this might best be addressed within the ethical considerations.
- Add: a commitment to meaningful consultation with Aboriginal peoples to identify values.
- There is no reference to existing Aboriginal and treaty rights, which may be a trigger for consultations.
- Need to clarify – what is the role of the Aboriginal Values within the framework if a management approach is not on traditional Aboriginal lands?

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## **Q4 – Ethical Considerations**

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- It was suggested that the ethical considerations should be the organizing framework that guides all NWMO activities – all the key questions are linked to ethics.
- One participant suggested that NWMO should establish a set of ethical principles to guide its work.
- Need to clarify who determines if the ethics are right. Some suggested that this determination rests with the CNSC, others felt that it will be determined by Canadians.
- The key question suggests a very narrow ethic, needs to be rephrased to reflect on both process considerations and management approach considerations.

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- Need to identify and then address the important ethical considerations and requirements.
  - The NWMO mission statement (objective, mandate) should add a commitment to an approach that is ethical underpinned to the phrase: “an approach that is socially accepted, technically sound, environmentally responsible and economically feasible”.
  - There are embedded ethical values in NWMO’s work, need to make those transparent to determine if there are internal conflicts.
  - Need to reflect on the ethics of continued use of nuclear power.

#### **Q5 – Synthesis and Continuous Learning**

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- Clarify the potential role of phased decision-making within a management approach. In this regard, change periodic assessment (bullet #3) to periodic evaluation. Emphasize that based on new/better information, the management approach could change.
- The words are good, the ‘to do’ is the test.
- How do we get the answers?

#### **Q6 – Social Aspects – Human Health, Safety and Well-Being**

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- One participant suggested that in determining acceptable risk that consideration be given to all segments of Canadian population, including women, children and reflecting gender and age.
- Add: a commitment to present risks in terms understandable and relevant to the layperson.
- How will NWMO determine social acceptability not currently addressed?
- The level and form of acceptable risk be established through a public process (really a question of governance).
- Have difficulty seeing how these apply to each of the different management approaches.
- Risk is important, but it needs to be done/presented in a way people can understand.

#### **Q7 – Security**

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- It was felt by many that the questions and considerations were good but will be difficult to answer.
- Generally, a good relevant question.

#### **Q8 – Environmental Integrity**

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- Consider incorporating Aboriginal values to this key question as a consideration – at a minimum, note the importance of Aboriginal values.

- Two participants suggested that a consideration of nuclear phase out should be included within the context of bullet #3 regarding full costs accounting. Others indicated that this was a matter beyond the NWMO ability to influence.
- Bullet #4 – define the term “an acceptable overall degree of risk”.
- One participant suggested that this could only be determined when the CNSC hearings occur and a report issued – others felt that this could only be defined by the community.
- Even if aboriginal perspectives are over-arching, need to take account of aboriginal ecological knowledge.
- Need a bullet that Aboriginal knowledge and comfort with these developments needs to be included.

#### **Q9 – Economic Aspects**

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- It was suggested that NWMO explain how significant negative socio-economic impacts are avoided or minimized (bullet#3).
- Add a bullet that commits to providing local employment opportunities and other community benefits.
- A definition of community is required – what is it?– should include regional areas and along transportation routes.
- Economic viability should be determined on full cost accounting, including social and environmental benefits and costs.
- The host community will provide a benefit/take responsibility for society – they should enjoy a net benefit – how do you do this without it appearing to be a bribe?
- How do you determine what is a negative socio-economic impact, how do you determine if they are avoided or minimized – this is too subjective.
- Definition of community – how far does that extend? Geological disposal might be in a very remote place, but reactor sites are not remote – this will be one of the biggest problems for people looking at siting.
- Voluntarism – should not be based on giving a community everything they ask for.

#### **Q10 – Technical Adequacy**

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- Cumulative effects (bullet #4) should also be addressed in Q6 – Social and Q8 – Environmental Integrity.

- Need to specify the criteria that determines technical adequacy.

### **Other Comments on the Framework**

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- What is meant by social acceptability? There is no definition provided.

#### **6) Other Comments**

- A question was asked how the NWMO would assess hazards and risks given that the NWMO does not have such technical expertise. It was explained that NWMO will obtain advice from competent technical advisors/consultants.
- It was also suggested that NWMO should consider the range of opinions on risk and hazards – consult broadly with different technical advisors.
- There was general support from the participants for the NWMO establishing a panel of recognized experts (recognized by the range of views on nuclear energy and wastes) to establish a common set of facts regarding hazards and risks to help inform the NWMO and Canadians.
- The National Council of Women requested that its opposition to the continued use of nuclear energy be noted.

### **Status of Notes**

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- These are the final summary notes of Session #2 and are not intended to represent a verbatim transcript.

## 3.2 ONTARIO REGIONAL DIALOUGE SESSION #2

### NWMO Ontario Regional Dialogue Session #2

**Saturday, March 27, 2004  
Best Western Hotel  
North Bay, Ontario**

#### Summary Notes

#### 1) Participants

The following were in attendance at the NWMO Ontario Regional Dialogue Session #2 –  
March 27, 2004:

Name	Organization
Al Leggett	Ontario Society for Environmental Management
Bill Limerick	Northwestern Health Unit
Brennain Lloyd	Northwatch
Derek Paul (Dr.)	University of Toronto, Department of Physics
Dougall McCreath (Dr.)	Laurentian University, School of Engineering
Frank Palmater	Ontario Metis Aboriginal Association
Gary Scripnick	Timmins Economic Development Corporation
George Ylonen	Concerned Citizens of Manitoba
Jack Falkins	Ontario Metis Aboriginal Association
Janice Maticzuk	Atikokan Citizens for Nuclear Responsibility
John Coupland	Thunder Bay Emergency Measures Organization
John Jackson	Ontario Environmental Network
Jose Freire-Canosa (Dr.)	Society of Energy Professionals
Phillip Penna	Canadian Uranium Alliance
Ido Vettoretti	Ontario Public Health Association
Monica Cullum	Provincial Council of Women of Ontario
Shirley Farlinger	IICPH
Graham Strickert	Lakehead University Student Union
Vernon Edwards	Ontario Federation of Labour

## 2) Overview of Session #2

This was the second session of Ontario Regional dialogue on NWMO Discussion Document #1 – Asking the Right Questions?. The first session of the Ontario Regional Dialogue was held on March 4, 2004 and focussed on the nature of the problem facing Canada regarding the long-term management of used nuclear fuel.

Session #2 focussed on the remaining components of Discussion Document #1, specifically:

- Key Terms and Definitions
- The Range of Possible Technical Methods
- The Proposed Analytical Framework

Presentations on all three components were provided by Donna Pawlowski of the NWMO. Session #2 was facilitated by Jim Micak of DPRA consultants.

The dialogue session focussed, in a roundtable discussion, on three key questions:

- **Terms and Definitions** – Are the key terms and definitions regarding the technical methods and management approach clear, understandable and appropriate?
- **The Technical Methods** – Is the characterization of technical methods appropriate? Should other technical methods be considered in the study beyond the three required by legislation? If so, on what basis?
- **The Analytical Framework** – Does it capture the key issues? What changes should be considered? Is it comprehensive?

Following is a summary of the main comments that were put forward by individuals as they reflected on these different discussion areas. No attempt was made to achieve a consensus or agreement on the various comments. Where agreement was evident, it is noted.

## 3) Discussion on Key Terms and Definitions

Dialogue participants were asked to consider five key terms and definitions presented in Discussion Document #1. The key terms are:

- ? Technical Method
- ? Disposal
- ? Storage
- ? Treatment
- ? Management Approach

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**(a) Technical Method**

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- The participants were generally comfortable with the definition of technical method.
- Some participants felt that not enough information was provided regarding the methods. It was suggested by one participant that a judgment on the technical methods could only be made after a proper environmental assessment which included a description and comparative evaluation of each method listed.

**(b) Disposal**

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- There were different opinions expressed regarding the definition of disposal. Many participants were comfortable with a definition that clearly states that disposal is a conclusive method with no intention of retrieval. The definition should be clear and many felt that the definition was consistent with the public's understanding of the term disposal.
- Some other participants suggested that the term disposal ought to be dropped and replaced with the term placement. Placement could include methods of both storage and disposal. The intent underlying the word placement is that there would be a commitment to provide monitoring and oversight of the placed wastes whether storage at reactor sites or storage in deep geologic settings – placement would not be defined as conclusive.
- A suggestion was made that perhaps the NWMO could include another term that being placement.
- It was also suggested that all definitions for disposal, storage, treatment and placement include a reference to "isolating" the used fuel from people and environment.
- Some discussed the concepts of retrievability and accessibility, and thought that these distinguishing characteristics were more relevant to the discussion.

**(c) Storage**

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- The definition for storage generally was acceptable.
- It was proposed that the words "future activities" as presented in the definition be defined or explained. Certainty in terms of the type of future activities contemplated would assist with both understanding and assessment of the merits of storage methods to be considered.

**(d) Treatment**

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- Few comments were provided on the definition for treatment. It was suggested that the definition might be expanded to include – "for example, change its [wastes] characteristics by reducing volume and reducing toxicity"

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**(e) Management Approach**

- There were several suggestions for clarifying and expanding the definition of management approach. Some suggested that a description of the intent and application of the management approach should be provided – current wording is so general, it lacks meaning.
- A question was raised regarding where ethical considerations applied in the definition of a management approach.
- Communication and awareness building should be identified as a component of the management approach.
- Research should be clearly referenced as a component and described as to intent and role within the management approach.
- The decision-making approach should be specifically described.
- Consideration of societal values should be incorporated.

**4) Basis for Determining Whether to Study Technical Methods**

After a presentation on the technical methods, the participants were asked to consider the range of technical methods presented in Discussion Document #1 – Chapter 4, specifically whether a rationale existed for the NWMO to study technical methods other than the three required to be studied by legislation (deep geologic disposal, on-site storage, centralized storage). Participants were asked to provide comments on two groups of methods:

- (a) Technical Methods of Limited Interest
- (b) Technical Methods Receiving International Attention

**(a) Technical Methods of Limited Interest**

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- There was some agreement among the participants that the technical methods of limited interest should not be studied by the NWMO. Specific reasons included:
    - Several of the methods contravene international agreement, treaties and conventions. Canada, as signatory to such documents, cannot propose actions that would violate these agreements.
    - The fact that almost no country is studying or researching these methods suggests that the methods have little merit. As such, it would be unreasonable for NWMO to study/consider these methods.
    - Some methods are clearly unacceptable – dilution and dispersion would be irresponsible. Space disposal is too expensive, considerable processing of the wastes would be required and the risk of an accident too great.



- Some participants offered an alternate view. In particular, suggestions in support of research and deep seabed disposal were made. It was suggested that placement in the ocean floor could contain the wastes and any movement of waste material would be slow over time allowing for significant reduction of the radioactive levels of the waste as it migrates through the ocean floor sediments. Others expressed strong reservations for such a method suggesting that the potential for damage to ocean ecosystem could be great.
- Some participants suggested that methods should not just be categorically rejected, and as research is conducted on any of these methods, the results should be monitored and evaluated for their potential for long-term management. In this regard, it was suggested that interim storage provides the NWMO with an opportunity to adjust its management approach based on new information. A stepwise approach to decision-making might be prudent.
- Finally, there was considerable discussion around the concepts of control and access, some felt that it would be unethical to consider methods that put the used fuel out of our control. Others noted that societies do crumble, and that both sides of the coin need to be considered, perhaps a system which relied on maintenance and controls, but could be quickly moved to isolation if necessary.
- Others questioned whether giving people the problem of perpetual management was better. It was noted that long-term management is a burden, but that was part of the cost associated with the decision to use nuclear energy.

#### **(b) Methods Receiving International Attention**

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- Several participants indicated that they did not know enough about these methods to offer an opinion as to whether they should be studied or not. Specifically, it was suggested that:
  - A fuller description of what is meant by reprocessing, partitioning and transmutation be provided– the description should include a discussion of the advantages and disadvantages of the methods.
  - A study on transmutation should be conducted by the NWMO to inform on the merits of this technology, specifically to examine the energy costs associated with it.
- As a guiding principle, one participant suggested that if any of these methods create additional wastes or requires an investment that commits Canada to a nuclear future, it should not be studied.
- Several suggested that Canada should not consider exporting its waste to an international repository. The concerns expressed were two fold – Canada should assume responsibility for the waste it generates, secondly, exporting waste to another jurisdiction would mean that Canada would not have control over the potential future uses of these wastes.

- A question was raised about whether the NWMO has the mandate to consider international repositories, and the effect of NAFTA. Does NAFTA require Canada to accept nuclear waste from the U.S.? This was seen as unlikely, but was acknowledged as a legal question that may require interpretation.
- A few participants suggested that reprocessing of wastes is not practical – given the availability and cost of uranium within Canada, reprocessing would not be cost-effective for the foreseeable future.
- Several participants suggested that interim storage provides the time to monitor the technological advancement associated with these methods and they could be re-evaluated as new information emerges.
- It was noted that Canada did have a program to investigate reprocessing in the 1970's and 1980's – and at the time also sent some used fuel to Italy for reprocessing.

Finally, there was some discussion around the three methods that must be studied as specified in the NFWA. Specifically there was interest in knowing more about what the three would look like, what they would entail, for example would disposal be based on the AECL concept (which was not based on a copper canister), or the various cast studied tabled during the hearing? What is the current state of knowledge around these methods? Would there be provision or potential for combinations of the methods? A suggestion was made to provide, as an interim step and prior to DD#2, some indication of the nature of information that would be provided regarding the methods, perhaps a table of contents, or listing of the relevant sections describing the methods.

## **5) The Analytical Framework**

The participants were asked to provide comments on the proposed NWMO analytical framework. Specifically, the discussion focussed on whether the Key Questions and supporting considerations were complete, their significance and any proposed modifications or clarifications. In addition, participants were asked whether the Analytical Framework was comprehensive.

### **(a) General Comments**

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- Some felt that the most important key question is Ethical Considerations – although several questioned relevance of the ethical considerations presented.
- Regarding the various considerations of risk within the framework, an important risk consideration that is not evident is the aspect of public outrage – the framework needs to acknowledge and consider this component of risk and the related social aspects.
- Several suggested that trust needs to be incorporated and reflected within the analytical framework in an explicit way – currently at best, it is only implied.

- Trust might be considered as an overarching aspect within the framework.
- Flexibility was raised as an important consideration – a need to ensure that mid-course corrections could be taken (rather than being put on a train that can't be stopped). Others noted that as you increase flexibility over the long-term, you increase the potential that it won't work
- Several participants suggested that it was not clear as to the purpose and application of the analytical framework. How is it to be used? What is the significance of the questions and considerations? More information is needed
- Several noted that the language used was dense and unplain, many of the terms used need to be defined. For example, what do the terms “fair and equitable” mean?

### **Q1 – Institutions and Governance**

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- Within this aspect, there should be a commitment to a mid-course change of direction in implementing the long-term approach based on new information – make this commitment clear and understandable.
- Include within this aspect a commitment to public oversight as part of the governance for the long-term approach – public confidence is lacking in the current processes of law making for example, there are many issues revolving around public confidence in the NWMO as an institution and the laws that apply to used fuel management – a key role for the public as governors of the approach is required.
- The relevant government departments and ministries should be identified, e.g. Ministry of Health, Environment, etc.
- There needs to be clarity around accountabilities and responsibilities – who is responsible for what, it is not clear. Also the notion of penalties may need to be introduced.

### **Q2 – Engagement and Participation in Decision-Making**

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- Education and awareness are important in building public trust and confidence. There needs to be better ways to inform the public as to the benefits of nuclear energy and the effectiveness of waste management methods – consider tours of the existing interim storage facilities as an example.
- Effective ways of consulting the public are needed – the public consultation should not be restricted to the Provinces that produce nuclear wastes – should be broader and nation-wide.
- Education on nuclear waste issue must be balanced – reflecting all perspectives.

- 
- A question was raised whether this key aspect implies a public veto within the management approach – if yes, no approach may work.
  - Include specific reference to engagement of government departments and agencies, federal, provincial and municipal.
  - The engagement processes need to be effectively inclusive and influencing. A key consideration is how has it influenced thinking – this needs to be recognized
  - Social scientists need to be involved

### **Q3 – Aboriginal Values**

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- There is a need to ensure that the consultation process is designed to identify and reflect Aboriginal values.
- The Key Questions should also explicitly recognize treaties and Aboriginal rights, and land uses..
- It should be recognized that many non-Aboriginal Canadians share these values and do not view them as exclusive to Aboriginal peoples.

### **Q4 – Ethical Considerations**

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- Some suggested that the question was not properly presented – fairness and equity are not seen as the right words, it was felt that the concept of responsibility was absent from the ethical considerations. An alternative was suggested ‘does it build trust between communities and generations?’, the need to build inter-generational trust was seen as important.
- The specific ethical considerations that will guide both the process as well as the management approach and the long-term outcome should be identified – an ethical framework is necessary to do an ethical impact analysis.
- A suggestion was made that of all the actions of the NWMO should be subject to a peer review, including a review of the development and application of the ethical considerations.
- It was noted by one participant that the NWMO is responsible to the nuclear energy producers and only the NWMO appoints members to its ethics panel – it was suggested that if the NWMO wants to be ethical, others should be engaged in this process of nomination and appointments.
- The concepts need to be defined – the concept of environmental justice as used in the US is different than in Canada.

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### **Q5 – Synthesis and Continuous Learning**

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- Consider continuous teaching as part of this overarching aspect.
- There needs to be a broad communication and awareness program today – the communication program needs to be responsive and accessible and relevant to all Canadians. The program must inform in such a way that the public can decide how this issue affects them and also allows them sufficient information to participate in the process. TV and newspapers may be the best ways to inform Canadians. The information presented must be fair and a balance.

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### **Q6 – Social Aspects – Human Health, Safety and Well-Being**

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- Add clear and relevant risk communication as a consideration.
- Risk is at the heart of social safety, need to clarify who will determine what an acceptable risk is and how this will be determined – public should have a role on this determination (some suggested that those who are most seriously affected are those from whom concurrence is required).
- It was questioned whether nuclear waste can actually contribute to human health, safety and well-being

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### **Q7 – Social Aspects – Security**

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- Security needs to be defined clearly and there is a need to understand how security is to be applied in assessing the technical methods.
- Some participants suggested removing terrorism from the key question, others felt strongly that terrorism is an important consideration due to the potential consequences of a terrorist action and should remain in the question.

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### **Q8 – Environmental Aspects – Integrity**

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- Concern was expressed about the wording of the considerations – it was suggested that the terms are less than clear - consideration of real nature appears to be lost – suggested that the words and terms be kept simple, the language used poses a real problem.
- How long is the commitment to monitoring – effects could be felt for 1,000's of years.
- Risk and effects needs to be placed in context, shipping nuclear wastes through a community is nowhere near as risky as the shipment of propane – don't overestimate risk within the framework.
- It was acknowledged that the attempt is to be more holistic in the approach to environmental issues rather than reductionist, but is what is proposed realistic?

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### **Q9 – Economic Aspects - Viability**

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- There is a need for some good financial analysis
- Communities need to be defined.
- One participant suggested that the management approach should not coerce communities to accept wastes to take advantage of economic incentives – an alternate view was expressed that there are communities that may be willing to accept wastes and the associated economic benefits - don't foreclose this as a consideration within the framework.

### **Q10 – Technical Aspects – Adequacy**

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- In the question what's the definition or test of best available – define and make clear.
- There is not enough information provided to be able to determine adequacy.
- Need to keep in mind that what is technically adequate today may not be economically viable but may become so in the future – this needs to be considered in the management approach.

### **6) Other Comments**

- Several participants indicated that the dialogue process was worthwhile and should be continued.
- Some participants also indicated that the dialogue process does not reflect all Canadians and that a broader NWMO consultation process is necessary.
- Derek Paul noted that he was attending under protest, sought a public debate on energy options.

### **Status of Notes**

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- These are the final summary notes of Session #2 and are not intended to represent a verbatim transcript.

### 3.3 QUÉBEC REGIONAL DIALOGUE SESSION #2

#### SGDN Dialogue régional du Québec; session 2

**Hyatt Regency de Montréal  
1255 Jeanne-Mance  
Montréal, Québec**

#### Compte-rendu

#### 1. Les participants

Les participants suivants ont assisté à la deuxième session du Dialogue régional du Québec le 15 avril, 2004:

Nom	Organization
Christiane Bolduc	Centre d'expertise en matières résiduelles
Louis-René Dessureault	Sirsi Canada
Vincent Drieu	ENJEU
Martin Frankland	UNIVERTCITE
Alfred Jaouich	Université du Québec à Montréal, Dépt. des Sciences de la Terre et de l'Atmosphère
Denis Leclerc	Chantier Jeunesse
Alan Penn	Administration Régionale Crie
Jean-Guy Vaillancourt	Université de Montréal, Département de Sociologie

#### 2. Remarques générales sur la rencontre

Le présent document fait état des discussions qui ont eu lieu lors du « dialogue régional du Québec » tenu le jeudi 15 avril 2004 à l'hôtel Hyatt Regency de Montréal. Au total, 15 personnes étaient présentes au dialogue, parmi lesquelles :

- 8 citoyens ou représentants d'organismes divers
- Donna Pawlowski, représentant de la SGDN
- 6 personnes de l'équipe d'animation et de la firme DPRA.

Anita Ramacière ouvre la session en présentant le déroulement et le processus du dialogue.

Constance Ramacière fait le point sur la 1<sup>er</sup> séance de travail et présente une synthèse des quatre rencontres qui ont eu lieu à travers le pays au cours des mois de mars et avril 2004.

Les commentaires et les observations ont été regroupés selon les huit thèmes suivants :

- 1) Les sujets relevant d'une politique énergétique
- 2) La SGDN et sa structure de gouvernance
- 3) L'utilisation future du combustible nucléaire irradié
- 4) La sécurité
- 5) Les questions d'éthique
- 6) La nature du risque
- 7) L'établissement des faits
- 8) Autres sujets

Elle poursuit en faisant le point sur les suites qui ont été données au dialogue régional du Québec du 9 mars 2004, soit :

- 1) La liste des participants à la 1<sup>e</sup> session du Dialogue Régional du Québec a été distribuée à l'ensemble des personnes présentes le 9 mars 2004
- 2) Les participants avaient exprimé le souhait d'obtenir davantage d'informations sur le comportement des déchets nucléaires irradiés :
  - L'information est disponible sur le site Internet de la SGDN au document 3-2 Aspects médicaux des déchets fortement radioactifs et dans le document de discussion # 1 Posons-nous les bonnes questions
- 3) Les participants avaient exprimé le souhait d'obtenir davantage d'informations sur les avantages et inconvénients des solutions proposées par la SGDN
  - Les travaux actuels de la SGDN portent sur ce sujet et les résultats seront présentés à l'automne dans le Document de discussion # 2
- 4) Il avait été demandé de hiérarchiser les critères d'évaluation des différentes solutions de gestion des déchets nucléaires.
  - C'est un des objectifs de la présente rencontre.
- 5) Les participants avaient souhaité en savoir davantage sur les bénéfices de l'énergie nucléaire.
  - La SGDN n'a pas de références complètes à ce sujet, cependant, le site <http://www.cna.ca/english/files/Benefits.pdf> constitue une source d'information en la matière.



- 6) Les participants souhaitent obtenir une synthèse des expériences internationales en matière de gestion des déchets nucléaires.
- Le feuillet intitulé « Dans les autres pays », distribué au début de la rencontre en fait un tour d’horizon.

Concernant le rapport du Dialogue électronique, il est expliqué que pour des raisons de précision de langage, il a été décidé de présenter les commentaires reçus dans leur langue d’origine. Aucun commentaire n’ayant été reçu en français en date du 12 avril, la version préliminaire de la synthèse du dialogue est présentée en anglais sous le titre « *DPRA E-Dialogue on the NWMO Discussion Document « Asking the right Questions » - Draft Summary of Comments* ».

Le rapport préliminaire de la 1<sup>er</sup> rencontre a été distribués aux participants. Ils sont invités à faire parvenir leurs commentaires à DPRA au plus tard le 21 avril 2004 afin qu’ils puissent être intégrés au rapport final,

La 2<sup>e</sup> session porte principalement sur les questions soulevées dans le document de discussion #1 principalement sur la terminologie, les méthodes techniques et le cadre d’analyse. Madame Donna Pawlowski présente la terminologie, les différentes méthodes techniques et le cadre d’analyse.

La présentation s’articule autour de ces trois axes :

- La terminologie – Est-ce que les définitions sont raisonnables, tenant compte des travaux qu’entreprendra la SGDN ? Y a-t-il des changements nécessaires à une meilleure compréhension?
- Les méthodes techniques – Au-delà des trois méthodes définies dans la loi, à partir de quelles considérations la SGDN doit-elle entreprendre l’étude d’une autre méthode technique?
- Le cadre analytique – Y a-t-il une meilleure façon d’énoncer une préoccupation ou de bien saisir son importance? Quels aspects doivent être considérés lors de l’analyse des options? Pourquoi?

### **3. La terminologie**

Les participants du dialogue ont été demandés de considérer cinq termes clef et définitions présenté au Document de Discussion #1. Les termes clés sont:

- Méthode technique
- Evacuation
- Stockage
- Traitement
- Solution de gestion

À la fin de la présentation, plusieurs précisions ont été apportées. On retiendra particulièrement les questions et commentaires suivants :

- On a considéré que les définitions terminologiques proposées étaient claires et il a été convenu de les laisser tel quel.
- À ce jour, aucun pays ne s'est doté d'un plan ou d'une politique structurée concernant la gestion à long terme des déchets nucléaires.
- Les méthodes exposées ne sont pas exclusives les unes des autres; plusieurs pourraient coexister.
- Il faudrait mettre en perspective les risques et bénéfices de chacune des méthodes proposées.
- Est-ce que les techniques exposées sont scientifiquement documentées ? Sait-on si la matière est vraiment sécuritaire? Si oui, l'est-elle de façon permanente ?

#### **4. Les méthodes techniques**

Les participants ont souligné plusieurs éléments qui, selon eux, devraient être pris en compte pour procéder à une étude comparative des méthodes proposées.

##### **La notion de quantité/volume de déchets à traiter**

- Penser aux déchets existants, mais aussi aux déchets à venir (on doit considérer le volume de déchets, et son évolution.)
- Envisager une réduction des déchets, et garder à l'esprit l'importance de penser à ralentir, voire éliminer la production de déchets.
- La diminution du volume de déchets nucléaires n'est pas toujours synonyme de diminution de la radioactivité. (réduire le volume, ne signifie pas réduire le danger)

##### **La notion de temps illimité, au-delà de l'échelle humaine**

- L'échelle temporelle qui doit être prise en compte dans le traitement des déchets nucléaires est difficile à imaginer pour l'être humain, c'est pourquoi la question du temps demeure et revient perpétuellement au cœur du débat.
- La dimension temps, et la notion de long terme n'est pas unique à l'énergie nucléaire. La particularité de cette énergie est cependant la longévité de l'activité des déchets qui en résultent.
- On pourrait envisager de traiter séparément la question des déchets actuels et celle des déchets à long terme car il semble difficile (voire irréaliste) de répondre à ces deux questions simultanément.

##### **La notion de coût et d'impact économique**

- La notion de coût ne devrait pas primer sur la sécurité dans le choix des méthodes de stockage. L'aspect financier devrait être le dernier à être considéré.
- Les méthodes de calcul des coûts de production du kilowatt /heure ont fait l'objet de discussions animées. En particulier la question reste posée de savoir si le coût relié à l'entreposage des déchets est inclus dans ce calcul.
- Il a été mentionné que, quel que soit le coût, c'est probablement le consommateur final qui devra l'assumer en grande partie.
- L'accent a été mis sur la responsabilisation des producteurs de déchets.

- La question est posée : pourquoi faire « payer la facture » à la société dans son ensemble, alors que le choix énergétique ne relève pas de la population?
- Plusieurs participants ont exprimé l'importance de procéder à des comparaisons justes et équitables de toutes les énergies. (Une question demeure : quels critères utiliser?)
- Le potentiel commercial et économique de l'uranium (dont le Canada dispose en quantité) pourrait-il être un frein au processus de réflexion et à la mise en place d'une politique sur le traitement des déchets?

### **La notion de sécurité et de danger pour la santé humaine et pour les écosystèmes**

- Plusieurs inconnues demeurent, tant encore une fois en terme de durée qu'en terme d'impact sur la santé humaine et les écosystèmes. Pour plusieurs cet aspect de la question devrait être parmi les premiers considérés.

Les méthodes techniques suivantes ont particulièrement retenu l'attention des participants.

- A) Le retraitement et la transmutation, qui semble pouvoir permettre « d'en faire plus à partir de la même quantité de matière première ».
- B) Un site central :
  - Qui va vouloir accueillir ce site ?
  - Implique de prendre en considération les problèmes et risques reliés au transport
  - Tend à déresponsabiliser les producteurs de déchets par rapport à la gestion de ces derniers et ses impacts potentiels sur l'environnement, la santé etc....
- C) L'entreposage en couches géologiques profondes
  - Au Canada, cela signifie notamment que l'entreposage des déchets se ferait sur des territoires autochtones, ce qui pose de multiples problèmes, notamment d'ordre éthique.

## **5. Le cadre d'analyse**

La deuxième partie de la présentation de Mme Pawlowski portait sur le cadre d'analyse.

### **Les questions et les commentaires d'ordre général**

- Par rapport à l'utilisation d'un tel cadre d'analyse, il a été précisé que les 10 critères présentés sous forme de « bulles » n'étaient pas des éléments isolés, mais des critères en interrelations, qui de plus demeureraient valides, quel que soit le choix de méthode technique qui sera arrêté ultérieurement.
- Les critères présentés, n'étaient aucunement hiérarchisés. Certains ce sont risqués à le faire, mais aucun consensus n'a été trouvé quant à l'importance relative des critères exposés.
- Certains points ont cependant suscité plus de réactions que d'autres.

L'ordre proposé était le suivant (du plus au moins important) :

1. Santé, sécurité et bien-être de la population
  2. Intégrité environnementale
  3. Acceptabilité sociale (dans le processus décisionnel notamment)
  4. Sécurité
  5. Techniques
  6. Aspects économiques
- Au plan terminologique, certaines modifications ont été suggérées :
    - Les aspects sociaux font l'objet de 2 bulles différentes, ce qui prête à confusion. On suggère donc de reformuler les énoncés de manière à préciser que, dans un cas, il s'agit de sécurité et de bien-être et dans l'autre de sociopolitique et de sécurité nationale.
    - En français, il y a parfois confusion entre sûreté et sécurité. Une attention particulière devra être portée à l'utilisation de ces deux termes.
    - Il a été suggéré que le terme " protection " doive être utilisée quand faire référence à " santé et bien-être ".
    - Un participant a mentionné qu'en reformulant les critères proposés et en les regroupant différemment, on obtenait 5 dimensions essentielles, qui sont celles du développement durable.
  - Il a été suggéré de faire de la dimension temps/long terme un aspect en tant que tel.
  - Certains perçoivent cadre d'analyse comme idéaliste, voir presque utopiste.
  - En fin de rencontre un participant a mentionné que, selon lui, il manque dans le cadre d'analyse proposé une évaluation des scénarios :
    - En termes de volume de déchets nucléaires (augmentation, diminution ou production similaire), considération qui devrait apparaître de façon transversale dans les aspects scientifiques;
    - En termes de transfert intergénérationnel et d'éthique.

Finalement, on note pour tous les aspects que le langage utilisé gagnerait à être plus juste sinon, il risque de négliger la réelle complexité des choix qui seront à faire.

## **Revue de chacun des dix (10) aspects du cadre d'analyse commentaires des participants**

### **1. Cadre institutionnel et structure de gouvernance**

Il est difficile de prendre une décision quand la réponse à ces aspects n'existe pas.

Il est primordial de prendre en considération l'importance de conserver le contrôle à long terme sur les déchets. Dans cette perspective, il faut absolument continuer à posséder la technologie et développer connaissance et expertise dans ce domaine de la technologie.

La structure de gouvernance doit demeurer au-delà des gouvernements.

## **2. Engagement et participation au processus décisionnel**

C'est de la vertu. C'est réaliste de le souhaiter, est-ce réaliste de le faire ?

La pleine participation du public aux différentes phases de la mise en œuvre est de l'ordre de l'utopie.

Il est pertinent, courageux et ambitieux de susciter la participation de tous. Il faudrait cependant établir un mécanisme permettant d'équilibrer les différents intérêts.

## **3. Valeurs des peuples autochtones**

On identifie spécifiquement les valeurs autochtones et pas celles des autres types de populations.

Pourquoi ?

Il est suggéré d'utiliser l'expression « valeur du peuple canadien », qui reflèterait davantage la diversité des origines des Canadiens.

L'expression « clientèle concernée » a elle aussi été suggérée.

La formulation proposée (valeurs des peuples autochtones) a par ailleurs été retenue et ce, pour deux raisons majeures :

Parce qu'elle est une « valeur transversale » au Canada.

Parce qu'une des solutions envisagées est l'enfouissement des déchets nucléaires sous le bouclier canadien, soit en territoire autochtone.

Selon certains, la formulation valeurs des peuples autochtones introduit un biais et sous entend que la solution de l'enfouissement sous le bouclier canadien prime sur les autres.

En conclusion, la formulation de cet aspect a suscité bien des commentaires et mérite certainement qu'on s'y attarde davantage afin d'obtenir une expression plus juste.

## **4. Considérations éthiques**

Les participants ont apprécié que la notion de génération actuelle et future soit soulignée.

Une personne a cependant mentionné que « ce n'est pas propre à l'éthique d'être analysé » Pourquoi, alors en faire un critère à part entière ?

Selon certains, la répartition des coûts doit être immédiate. On ne peut se permettre de léguer aux générations futures la responsabilité d'assumer les coûts de nos agissements actuels.

La formulation de la question n'est pas claire pour tous : est-ce le processus qui est éthique ou est-ce la solution qui est éthique ?

## **5. Synthèse et acquisition continue du savoir**

Il est suggéré de remplacer le mot amélioration par protection. La question devient alors : « Est-ce qu'une synthèse des différents éléments de l'évaluation permet d'affirmer que la solution de gestion se traduira à long terme par une protection générale du bien-être des personnes et écosystèmes, et la solution intègre-t-elle le concept d'acquisition continue du savoir ? »

Il apparaît essentiel de préserver et de développer les connaissances, mais aussi de porter une attention particulière à la notion de recherche et développement (R&D).

## **6. Aspects sociaux – Santé, sécurité et bien-être de la population**

Aucun commentaire, sinon de porter une attention particulière à la terminologie. Il y a confusion entre sûreté et sécurité.

## **7. Aspects sociaux – sécurité**

Aucun commentaire

## **8. Aspects environnementaux – Intégrité**

Est-il nécessaire d'inclure la résilience ?

Il semble nécessaire d'améliorer la formulation.

En particulier, de manière à considérer le débat de manière plus large, englobant « la gestion des déchets du début à la fin, incluant le fait d'en produire moins »

Un débat a été engagé entre les participants à propos de l'énoncé « le risque général est acceptable » : pour certains, on vise le contrôle total sur le risque; pour d'autres, le risque doit être gérable. Il s'agit finalement de définir l'état du risque et de préciser l'analyse du risque.

Le débat n'est pas clos, mais un certain consensus semble avoir été trouvé autour de la notion suivante : « le risque général est nul ou très faible et surtout gérable »

## **9. Aspects économiques – viabilité**

On ne peut écarter l'aspect économique, cependant, cette dimension ne doit jamais être considérée comme un frein à la réflexion et à l'action. « On doit être capable de se payer des solutions à long terme ».

Les coûts doivent inclure les coûts de production et de gestion des déchets mais aussi les coûts de santé et les coûts sociaux.

## **10. Aspects techniques – Applicabilité**

Aucun commentaire.

## **6. Autres commentaires**

Les participants concluent la séance en reconnaissant l'excellent travail de la Société et en souhaitant être tenus au courant des prochaines étapes.

Donna Pawlowski remercie tous de leur participation.

### 3.4 NEW BRUNSWICK REGIONAL DIALOUGE SESSION #2

#### NWMO New Brunswick Regional Dialogue Session #2

Saturday, April 3, 2004  
Fredericton Inn  
Fredericton, New Brunswick

#### Summary Notes

##### 1) Participants

The following were in attendance at the NWMO New Brunswick Regional Dialogue Session #2 – April 3, 2004:

Name	Organization
Bill Artiss	Enterprise St. John Board of Directors
Brent Smith	Association of Professional Engineers & Geologists of New Brunswick
Daniel LeBlanc	Petitcodiac Riverkeeper
David Thompson	Conservation Council of New Brunswick
Gordon Dalzell	Citizens Coalition for Clean Air
Léopold Chiasson	Association Francophone des Municipalites du Nouveau Brunswick
Lucy Wilson	University of New Brunswick, Dept of Physical Sciences
Mark McIntyre, Director	North American Young Generation in Nuclear
Neil Craik	Canadian Nuclear Society
Ron Perley	Union of New Brunswick Indians
Susan Farquharson	Eastern Charlotte Waterways Inc
Vern Garnett	World Environmental Defence League
Yvonne Gibb	Union of Municipalities of New Brunswick
Anna Grouard	PODIUM
Norville Getty	Union of New Brunswick Indians

Regarding Summary Notes of Session #1, requests were made to add to the note a balanced presentation of the discussion regarding the future use of the energy in the wastes; and an acknowledgment of the request for broader participation within the regional dialogue process (religious, municipal, social services). These comments have been added to Session #1 notes.

## 2) Overview of Session #2

This was the second session of New Brunswick Regional dialogue on NWMO Discussion Document #1 – Asking the Right Questions?. The first session of the New Brunswick Regional Dialogue was held on March 10, 2004 and focussed on the nature of the problem facing Canada regarding the long-term management of used nuclear fuel.

Session #2 focussed on the remaining components of Discussion Document #1, specifically:

- Key Terms and Definitions
- The Range of Possible Technical Methods
- The Proposed Analytical Framework

Presentations on all three were provided by Donna Pawlowski of the NWMO. Session #2 was facilitated by Jim Micak of DPRA consultants.

The dialogue session focussed, in a roundtable discussion, on three key questions:

- **Terms and Definitions** – Are the key terms and definitions regarding the technical methods and management approach clear, understandable and appropriate?
- **The Technical Methods** – Is the characterization of technical methods appropriate? Should other technical methods be considered in the study beyond the three required by legislation? If so, on what basis?
- **The Analytical Framework** – Does it capture the key issues? What changes should be considered? Is it comprehensive?

Following is a summary of the main comments that were put forward by individuals as they reflected on these different discussion areas. No attempt was made to achieve a consensus or agreement on the various comments. Where agreement was evident, it is noted.



### 3) Discussion on Key Terms and Definitions

Dialogue participants were asked to consider five key terms and definitions presented in Discussion Document #1. The key terms are:

- ? Technical Method
- ? Disposal
- ? Storage
- ? Treatment
- ? Management Approach

As a general comment, the proposed NWMO definitions seemed appropriate, however a concern was expressed that the language may not be clear enough for the general public – materials should generally be written for a grade 8 level. The following specific comments were provided:

#### **(a) Technical Method**

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- Participants had few comments on the definition of technical method – one suggested that the list of technical methods was incomplete in that avoiding the production of the wastes in the first place was missing as a possible method.

#### **(b) Disposal**

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- The definition implies that there will be no retrieval of wastes for future treatment, one participant felt that retrieval within the geologic disposal method was necessary, suggesting that even with a disposal method, retrieval should be possible – isolation of the wastes is desirable but keep the flexibility of wastes being retrievable – it was proposed that the definition be modified to reflect this flexibility.

#### **(c) Storage**

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- The definition of storage implies or presupposes that there is a future commitment to treatment based on the results of future technology – as such, the definition should also include a commitment to research regarding future treatment.

#### **(d) Treatment**

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- The definition should establish a link with storage and similarly reflect the commitment to research regarding treatment methods.

#### **(e) Management Approach**

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- The management approach should also include the identification of and commitment to research.

#### 4) **Basis for Determining Whether to Study Technical Methods**

After a presentation on the technical methods, the participants were asked to consider the range of technical methods presented in Discussion Document #1 – Chapter 4, specifically whether a rationale existed for the NWMO to study technical methods other than the three required to be studied by legislation (deep geologic disposal, on-site storage, centralized storage). Participants were asked to provide comments on two groups of methods:

- (a) Technical Methods of Limited Interest
- (b) Technical Methods Receiving International Attention

##### **(a) Technical Methods of Limited Interest**

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- A view was expressed that most of those methods imply disposal of the wastes. It was suggested that through disposal, society develops an attitude of ‘out of sight, out of mind’ that removes the urgency to identify and implement other more desirable management methods. For this reason, the disposal methods presented should not be considered, attention should focus on methods that support a commitment to more effective management and treatment of the wastes, so that future generations won’t have to address the matter
- The cost of the methods is an important consideration, safety of the method is the most important consideration but the cost associated with the methods can’t be ignored.
- One participant suggested that space disposal should be considered. This view was challenged by other participants, in particular, it was felt that the risk of things wrong with this option was too significant, the risk consequences too great and the cost is likely to be too prohibitive.
- Any disposal method involving the oceans should be eliminated – the potential for contamination of the seas is significant, several of these methods would violate international law.
- One participant proposed that it should be shown that all methods have been studied and shown why they were discarded.
- All of the methods within this category preclude retrieval or containment, and as such should be eliminated from further consideration.
- After much discussion, there was consensus that the methods of limited interest should not be given further consideration.

##### **(b) Technical Methods Receiving International Attention**

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- One participant pointed out that the energy remaining in the used fuel was 70 times the energy already extracted, so it was desirable to ensure that this energy was available for future generations.

- Several participants supported the potential of reprocessing and transmutation as possible future options – a concern was expressed that the possible retrieval of these wastes was not compatible with deep geological disposal as contemplated in the description.
- It was further suggested that the NWMO consider a step-wise approach to decision-making, specifically storage on site with the intent of retrieval of the irradiated fuel in the future, for the purpose of using the energy with a secondary benefit of reducing toxicity. Disposal should be undertaken only if necessary, but with the option for future retrieval.
- Several participants saw treatment methods, such as reprocessing and transmutation as possible future options however much was unknown - does it reduce the volume, will it create additional waste streams, will security issues be heightened due to accessibility of plutonium,. It was noted by one participant that reprocessing was currently not economic and fast reactors would need to be built. This method would be costly given the current cost of uranium, reprocessing would not be cost-effective at this time, but could be economic when uranium deposits are depleted. Others suggested that it would be useful for Canada to begin research on reprocessing/transmutation for the purpose of reducing toxicity.
- Some participants expressed reservation regarding the use of international repositories. Once exported, Canada would lose control over the management and potential use of the wastes. Canada should be responsible and manage its own wastes. Additionally, concerns were expressed regarding the transport of these wastes – some preferred dealing with the wastes through storage at reactor sites, thus avoiding handling and transport. One participant considers that transportation of nuclear wastes would be much safer than the hazards caused by recent major accidents in the transportation of gunpowder and petroleum in New Brunswick.
- It was noted that deep boreholes had been considered in Pinawa (AECL's research laboratory), and that it appeared this practice would not allow the fuel to be retrieved.

## 5) The Analytical Framework

The participants were asked to provide comments on the proposed NWMO analytical framework. Specifically, the discussion focussed on whether the Key Questions and supporting considerations were complete, their significance and any proposed modifications or clarifications. In addition, participants were asked whether the Analytical Framework was comprehensive.

### (a) General Comments

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- Several participants felt that the Analytical Framework was comprehensive, asking the right questions, however, there was a need to clarify how some of these questions and considerations would be applied within the framework.
- One participant felt that NWMO, by posing the questions as presented in the framework, would be establishing a new standard of study unlike that undertaken by other industry.

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- There was a view expressed that Communication was necessary as part of the framework – a separate aspect could be considered for Communication.
  - As a general comment, a few participants felt that the framework does not adequately address the issue of on-going liability and who would be responsible for the costs of addressing any liability – the Provinces should not be held liable since this is a national public policy matter.
  - There was a suggestion that we need to reflect that this is the best we know, that there is much that we don't know.

The following are specific comments on each of the ten key questions that make up the Analytical Framework:

### **Q1 – Institutions and Governance**

- Consider a clear and understandable description of and commitment to the use of the precautionary approach – this approach should be a foundational consideration for NWMO. The Canadian Environmental Protection Act should be reviewed for its possible application.
- Timeframes – what are the periods of time that need to be considered, how long does the material need to be managed? Define what is meant by “many years” justify and be specific.
- Include reference to meeting relevant international treaties and conventions and United Nations protocols like Rio Agenda 21.
- Recognize that there is a convergence of regulatory frameworks between Canada and the United States, – understand the significance of NAFTA – reflect implications in the Analytical Framework.
- One participant said that these key questions should clearly state that no liability falls to the taxpayers of the Provinces. Another participant(s) pointed out that either the taxpayers or electricity consumers are the only source of payment.
- An organization like the NWMO needs to be representative of society more broadly, not just the utilities.
- The role of government needs to be clearly spelled out
- Need mechanisms to report back (to the public) on conditions of approval.

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## **Q2 – Engagement and Participation in Decision-Making**

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- Engagement and participation in decision-making is critically important, need to develop means and resources to make it happen
- Considerations should include a commitment to public education to inform people and to encourage their involvement in the process.
- Need to establish mechanisms for public engagement that ensures a level playing field – commit to appropriate engagement, providing funding to assist effective public engagement and to conduct research and reviews.
- Clarify whether the affected communities have a veto.
- Allow for community engagement throughout the life of the management approach, not just during implementation.
- transparency in both engagement and decision-making is important and should be clearly reflected.

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## **Q3 – Aboriginal Values**

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- Aboriginal values and interests are not limited to that which is presented. Aboriginal peoples have an interest in all aspects of the NWMO process and all aspects of the Analytical Framework. The way Aboriginal concerns were ignored in establishing Port Lepreau should not be repeated in this process.
- Several participants felt that non-Aboriginals share the described Aboriginal values and that the reference should be more comprehensive to reflect Canadians values.
- Specific engagement processes with Aboriginal peoples are required, from a governance perspective the decisions rest at the grass roots level.

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## **Q4 – Ethical Considerations**

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- It is unclear what ethical foundation is being used - this needs to be explicit – which will be used, how will be it decided, who will be involved, etc.
- The framework does not adequately address/describe an ethical foundation. In a society like Canada's, whose ethics do you use – many different religious ethical frameworks exist – how do you select?
- NWMO needs to provide more information on the backgrounds of the ethics specialists providing advice.

- Some participants believed that their opinions on this subject were sufficiently ethical and based on sound technical knowledge of the subject, without having to resort to professional ethicists of dubious technical knowledge of this subject.

#### **Q5 – Synthesis and Continuous Learning**

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- The considerations need to include a commitment to public participation throughout the management approach.
- Include references to historical perspectives or lessons learned as part of the key question considerations- we learn from the past to help inform on our future.
- Include a reference to continued education in addition to learning.

#### **Q6 – Social Aspects – Human Health, Safety and Well-Being**

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- We may need to think out of the box when thinking about stress – maybe draw from worker’s compensation practices - establish a fund to deal with any related mental, public health and safety matter affecting communities, .
- Specific reference to psycho-social health studies and effects as one additional consideration was made, link this consideration to the community fund designed to respond to community health and safety matters.

#### **Q7 – Social Aspects – Security**

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- Security is an utmost concerns – a key aspect
- Include a commitment to full risk assessment of possible security scenarios.
- Include, as a consideration, security consideration related to the possible transport of wastes from the reactor sites.
- Ensure an opportunity for the community to become involved in any matter regarding the movement of wastes.
- Need to be aware of the relationship between security and human rights, cannot use security to override or infringe on human rights.

#### **Q8 – Environmental Aspects – Integrity**

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- Generally comprehensive – add specific reference to community oversight or “watch dogs”.
- Need to do a better job than we have in the past, need to put teeth into the ‘watch dogs’.

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- Expand the NWMO public advisory group – add environmentalists, consider a group like the Canadian Environmental Network.

### **Q9 – Economic Aspects - Viability**

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- Ensure full costs of all aspects not just cost of management – include health costs, environmental costs and education costs.
- Clarify who will do the socio-economic studies – should be done by local communities.
- Clarify who has the ultimate liability and consider the role of small producers in that.

### **Q10 – Technical Aspects – Adequacy**

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- Add to the last consideration “opportunity, adaptability and responsibility are acknowledged and acted upon.”
- Peer reviewers should include members of local communities.
- Peer reviewers must have an arms length relationship from the energy producers.
- Climate change may be extremely important, may have significant consequences for a site like Point Lepreau. However, it was pointed out that the Solid Reactor Waste Management Facility (SRWMF) at Lepreau was high above sea level and that if global warming causes a rise in sea water level, the city of Saint John would be seriously impacted much sooner than Lepreau. Note that there is a dip in the access road to Lepreau but a bridge across could be easily built if this becomes necessary.

## **6) Other Comments**

### **(a) Engaging the Broader Community**

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- It was noted that not all representatives of civil society were participating in the exercise – LSD’s, political, and government representatives were not at the discussion.
- Participants provided suggestions for broader, public engagement activities.
  - Consider public hearings and meetings.
  - Ask the public what information is needed to inform itself.
  - Consider appearing on regional talk shows.
  - Hold town hall meetings.
  - Make information materials broadly available.
  - Keep information materials simple, easy to understand and present material in terms that are relevant.

### **Status of Notes**

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- These are the final summary notes of Session #2 and are not intended to represent a verbatim transcript.



## APPENDIX 4: DPRA E-DIALOUGE POSTINGS

- 4.1 Energy Policy Matters
- 4.2 NWMO and Its Governance Structure
- 4.3 Nature of the Hazard
  - 4.3.1 Possible Statement of Facts – Nature of the Hazard
- 4.4 Future Use of Used Nuclear Fuel
- 4.5 Ethics
- 4.6 Technical Methods
- 4.7 General Comment on Discussion Document #1 – Asking the Right Questions?
- 4.8 Documents Posted

## APPENDIX 4: DPRA E-DIALOGUE POSTINGS

In the timeframe from March 8 to April 21, 2004, approximately 50 submissions from dialogue participants were posted on the E-Dialogue. DPRA Canada has developed a brief summary of comments submitted in this period, as provided below. A list of documents posted on the E-Dialogue follows the summary of comments.

### 4.1 ENERGY POLICY MATTERS

- As a benchmark, the challenge should be a cradle to grave examination of nuclear power, including limits of waste generation, timeframes for continued production, the place of nuclear power in Canada's energy mix and its role in civilian and military applications.
- Transmutation (described on page 66 of Discussion Document #1) does not explain that Accelerator Driven Systems (ADS) for Transmutation should actually generate electricity as outlined in NWMO Background Paper by David Jackson. Recommend that the NWMO and AECL continue to investigate this ADS generation of electricity for practicality.
- The Environmental Assessment Review Panel chaired by Dr. Lee which looked at the recent expansion of the uranium mines in northern Saskatchewan concluded that there was no way to keep exported Canadian uranium out of the nuclear weapons production. If we can't be honest with ourselves about what is known, how can we be trusted to be honest about what we do not know?

### 4.2 NWMO AND ITS GOVERNANCE STRUCTURE

In the Context section, p. 15, it is important that Canada's connection to WW II nuclear bombs and role in supplying uranium for nuclear weapons build-up has been included. At the end of the 'Post World War II' box, it is stated: "... uranium is exported solely for peaceful applications." This box needs a follow-up sentence on how, in spite of intentions and agreements, Canada can be connected to proliferation of nuclear weapons, ex. India. The material on p.18 should include both the Panel's recommendations that:

- A nuclear fuel waste management agency be established at arm's length from the utilities and AECL, and that its board of directors, appointed by the federal government, be representative of the key stakeholders; and
- The structure of the established Nuclear Waste Management Organization in a format that allows comparison to the Panel's recommendations.

### 4.3 NATURE OF THE HAZARD

Discussions of x-rays and radioactivity require revision. Radioactive materials do not emit x-rays; nuclear fuel waste does not emit x-rays. The relevance of x-rays to the present issue of nuclear fuel waste is that x-rays [to which we are exposed mainly through medical procedures] are a form of ionizing radiation; therefore x-rays constitute part of our annual dose of exposure, termed background radiation. Revisions are needed in the title/first paragraph of "Early Interest in Radioactive Materials - Medical Implications," p.14, and in "Why is used nuclear fuel hazardous," p. 28-29.

The comments previously posted on x-rays (*see paragraph above*) are incorrect: radioactive materials do emit x-rays, and nuclear fuel waste does emit x-rays. The point of using x-rays in making this type of explanation is simply that most people are more familiar with x-rays than they are with gamma rays. X-rays are not in any way different from gamma rays, except in the details of their creation and emission.

The statement in the first posting about x-rays should have stated: Radioactive atoms do not emit X-rays from their nuclei. The point is that because X-rays do not come out of the nucleus but are generated in other ways, X-rays are not considered to be a form of radioactivity.

Discussions of radioactivity and graphs presented (p.27) on radioactivity presumably do not include X-ray emissions and this is not made clear in the document. Also, thank you for stating clearly that nuclear fuel waste presents an X-ray hazard as part of the radiation hazard. It is unclear in the material on p.28-29 whether it is a general discussion of 5 main forms of ionizing radiation or whether nuclear fuel waste emits neutrons and X-rays, as well as alpha and beta particles and gamma rays. Since X-rays are not a form of radioactivity but X-rays are a form of ionizing radiation, there should be information on the total ionizing radiation emissions per bundle of used fuel waste with time, unless the x-ray emissions are insignificant, in which case this should be noted in the discussion. The potential health hazard over time posed by all the ionizing radiation emitted from nuclear fuel waste should be presented. ... as well as differences in their creation and emission, X-rays and gamma rays differ in their energies (and frequencies), with gamma rays having higher energies than x-rays. My point stands that the discussion of radioactivity and x-rays is presented in a confusing manner in Discussion Document 1.

The discussion of energy supply should be framed in terms of risk. The public needs to be educated on the potential risks of all energy options for Canada. These risks need to be conveyed in simple terms and be presented as a comparison between current Canadian energy sources. How do the health risks, development costs and environmental costs associated with the continued use and expansion of nuclear energy compare to the same amount of energy being produced by coal plants, gas plants, hydroelectric, wind farms etc.? As signatories to the Kyoto accord we have pledged CO2 reductions that cannot be met by increased dependence on carbon fuels. Are the risks associated with climate change greater or less than the risks associated with expanded nuclear energy production to meet are Kyoto requirements? I would be really interested in the answer.

In response to the question of which energy source has a greater risk, the Institute for Risk Research has an older book that compared risks for a variety of energy production methods ([www.irr-neram.ca](http://www.irr-neram.ca) see publications and Energy for 300 years). My recollection was the worst was coal (older technology), I think nuclear was one of the lower risk alternatives. Some of the wind data might now be out of date with more recent operating data available.

I think that the notion of risk as posed is too limited: "In its simplest form is it safer for me as an individual to live next to a nuclear power plant or next to a coal plant". This question again limits the sphere of what nuclear technology (and coal-fired electrical production) is - it is not just a power plant, it is a whole chain of industrial activities all of which must be taken into account, and sadly, they are not. So why talk about nuclear energy as if it is only a power plant? We must be holistic in our thinking about these problems. Fragmentary thinking is what has got us into the mess we are in. if we continue with that kind of thinking, we will continue to have trouble.

Also to illustrate is how misunderstood is Canada's minimal contribution to nuclear weapons, The National Post Jan 20, 2003 page A4 erroneously stated "Missing scientists trained by AECL; report - Left Pakistan Mysteriously - May be developing nuclear weapons in rogue states - allegations in Asia. Pakistani scientists like D.A.Q. Khan, metallurgist, got uranium enrichment expertise courtesy of AECL which helped to build a Candu reactor near Karachi" (KANUPP is a 137 MWe nuclear generating station supplying Karachi with electricity). The National Post article was nonsense, because any Pakistani's who came to Canada were only trained to operate KANUPP, which does not use enriched uranium. Also, a Scientific American Dec 2001 article on India, Pakistan and the Bomb, says "A few Pakistani scientists did go to Belgium for training in reprocessing technology. Returning to Pakistan, they constructed a small-scale reprocessing laboratory in the early 1980's (located 1,000 kms from KANUPP). In 1975 A.Q.Khan, a Pakistani metallurgist who had worked at an (uranium) enrichment plant in the Netherlands, joined the group." Nowhere in this excellent Scientific American 10 page article is Canada, KANUPP or AECL even mentioned.

#### **4.3.1 Possible Statement of Facts – Nature of the Hazard**

The objective in presenting the following items is not to imply or to reach a specific point of view but rather to eliminate many points on which agreement can easily be reached which, otherwise, might lead to distracting and unnecessary arguments. The purpose then would be to help in identifying more important points on which real disagreement should be debated further. I do not claim that this list complete so that, hopefully, we can add more to it as the discussion goes on.

#### **Facts**

- Exposure to too much radiation is harmful to human health. [How much is too much?]
- The main hazard from nuclear fuel waste is from exposure to its radiation.
- Chemical toxicity is an additional hazard from nuclear fuel waste, but is less alarming.
- The nuclear waste exists, and will remain radioactive and toxic for many thousands of years.
- There is some natural radiation everywhere - about 3 mSv in many places.

- There is no proven safe level of radiation exposure. ['Safe' isn't definable.]
- Exposure to radiation from external sources can be prevented by either shielding or removal.
- Radionuclides can enter the body only through breathing, drinking or eating. [ignoring possible neutron bombardment]
- Chemical toxins can enter the body through breathing, drinking or eating.
- To dispose of Canada's nuclear fuel waste will be costly. [How much is too much?]
- The cost of waste disposal from coal- and other-fired power stations is obscured by the dispersion of the waste products.

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## Principles

- We must protect present and subsequent generations from the effects of present and any future radioactive waste.
- We must prevent radionuclides and chemical toxins from getting inside our bodies from breathing, drinking or eating.
- An acceptable term for our obligation is 10,000 years.
- An acceptable level of additional exposure is the present background level.
- While rejecting any process we should examine the consequences of implied alternatives.
- Deductions[sometimes from other evidence]  
The problem of external radiation is solved by proper storage, as long as storage monitoring is continued. [How long can we count on having a stable society?]
- Evidence suggests that the effects of high doses of radiation are linear with dose, suggesting a dose-response of 0.02 serious effects per Sievert.
- At low levels of radiation (e.g. background and below) the dangers from radiation exposure are very small compared with other dangers to which we are exposed.
- Danger of ingesting sources of internal radiation can be eliminated by isolating the fuel waste from the surface environment.
- The problem of ingestible radiation sources is solved by geological isolation.
- Geological isolation is effectively accomplished by deep burial in a satisfactory pluton. [Can a satisfactory pluton be found?]
- Spent CANDU fuel waste can be transported safely after a few years (ten) of storage.
- Spent CANDU fuel waste cannot become a bomb in any configuration.

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## Facts and observations that may require further supporting evidence (And then may not be accepted)

- Spent CANDU fuel waste cannot explode by a nuclear reaction.
- Spent CANDU fuel waste after ten years generates only small amounts of heat.
- The transportation casks cannot be broken by any expectable accident or fire.
- Malfunctions of nuclear power reactors have occasionally led to disasters.
- Malfunctions of coal- and oil-fired power stations may cause problems over a longer time, and not be seen as disasters.

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## We want to avoid at least initially claiming as a fact any point that would seem to back one side into a corner.

- While stopping the further operation of nuclear power stations will stop increasing the problem, it will not solve the present problem.

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## First Step:

### Facts

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- Exposure to too much radiation is harmful to human health. [How much is too much?]
- The main hazard from nuclear fuel waste is from exposure to its radiation.
- Chemical toxicity is an additional hazard from nuclear fuel waste.
- The nuclear waste exists, and will remain radioactive and toxic for many thousands of years.

### Principles

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- We must protect present and subsequent generations from the effects of present and any future radioactive waste.

## Second Step:

### Facts

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There is some natural radiation - about 3 mSv in many places.

- There is no proven safe level of radiation exposure.
- Exposure to radiation from external sources can be prevented by either shielding or removal.
- Radionuclides can enter the body only through breathing, drinking or eating. [ignoring possible neutron bombardment]
- Chemical toxins can enter the body only through breathing, drinking or eating.

### Principles

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- We must prevent radionuclides and chemical toxins from getting inside our bodies from breathing, drinking or eating.

## Third Step:

### Facts

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- To dispose of Canada's nuclear fuel waste will be costly. [How much is too much? ]
- The cost of waste disposal from coal- and other-fired power stations is obscured by the dispersion of the waste products.

### Principles

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- An acceptable term for our obligation is 10,000 years.
- An acceptable level of maximum additional exposure is the present background level.
- While rejecting any process we should examine the consequences of implied alternatives.

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## Deductions

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- The problem of external radiation is solved by proper storage, as long as storage monitoring is continued. [How long can we count on having a stable society?]
- Evidence suggests that the effects of high doses of radiation are linear with dose, suggesting a dose-response of 0.02 serious effects per Sievert.
- At low levels of radiation (e.g. background and below) the dangers from radiation exposure are very small compared with other dangers to which we are exposed.
- Danger of ingesting sources of internal radiation can be eliminated by isolating the fuel waste from the surface environment.
- The problem of ingestible radiation sources is solved by geological isolation.
- Geological isolation is effectively accomplished by deep burial in a satisfactory pluton. [Can a satisfactory pluton be found?]
- Spent CANDU fuel waste can be transported safely after a few years (ten) of storage.
- Spent CANDU fuel waste cannot become a bomb in any configuration.

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## Facts and Observations

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- Spent CANDU fuel waste cannot explode by a nuclear reaction.
- Spent CANDU fuel waste after ten years generates only small amounts of heat.
- The transportation casks cannot be broken by any expectable accident or fire.
- Malfunctions of nuclear power reactors have occasionally led to disasters.
- Malfunctions of coal- and oil-fired power stations may cause problems over a longer time, and not be seen as disasters.

## 4.4 FUTURE USE OF USED NUCLEAR FUEL

- There is no statement explaining the amount of energy in the fuel when discharged from a CANDU reactor. I deduce that 5/7 i.e. 70% of the energy remains in the used fuel and is available for future energy use. I recommend that the NWMO brief should include a simple statement like that. Why call it “Used Fuel”? Suggest “Irradiated Fuel” or better “Irradiated Future Fuel”.
- The present generation, which discovered and developed nuclear power, is providing future generations with a source of greenhouse gas free fuel in this “Used Fuel”. This “Irradiated Future Fuel” is conveniently stored and easily retrievable either from the reactor site or a central storage location. The present generation is also providing future generations with the science and technology to use this “Irradiated Future Fuel”. I am quite proud of this energy heritage that I participated in leaving to future generations.
- The future of nuclear power needs to be addressed before the decision on a management option for aged spent nuclear fuel is taken. Some fear that the ‘impression of a solution’ to spent nuclear fuel

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will be used to promote new nuclear power plants, but the social context is larger than that. Many in the public recognize that aspects of the nuclear fuel waste issue which are known if production is stopped now, are predictable if present plants run their expected life-span, but become unknowable if nuclear power production is expanded.

- Where and for whom is the "cheap uranium"? The Lee Panel said that these tailing sites will have to be monitored "in perpetuity" - that's forever, so, cheap for whom? The approach should consider not only technology, but also economics or ethics, or the social impacts of that technology. Just because something can be done, does not mean it should be done, and if it is forced on the population at large at tremendous expense, it in fact limits the technological possibilities that future generations can pursue. What we have done by pursuing nuclear technology is limit the choices of future generations. What do we do then? We must make amends with future generations by pursuing to address the questions surrounding energy production in general, and nuclear reactor waste in particular, in a full and democratic manner. I would like us to hand on to the next generations not just technology, but full and informed democratic processes governing technology.
- "We cannot predict the future." I strongly feel that whatever is done with the fuel in the near future, we should not close the door to possible future use.
- Preventing future generations from accessing/using used nuclear fuel, would be unethical. Used nuclear fuel is known to contain "untapped" energy. It is simply not economical to re-use these bundles at this time. That is what will make long term STORAGE worthwhile. We have not yet extracted the full potential of the fuel bundles...
- The term "used fuel" is correct because it has been used - and in fact effectively "used up." A main argument regarding the potential energy remaining in the fuel is that the fuel, on being removed from the reactor, also contains a number of 'poisons' that render the fuel almost unusable. The only way to recover the usable portions of the fuel would be to re-dissolve the fuel to recover the plutonium. This is a risky, both because it now releases all the radionuclides for accidental dispersal, and because it also releases the plutonium to possible misuse.
- It is important to have a waste management strategy for any waste that we produce, be it industrial waste, household waste, or waste from the use of nuclear technology. The waste management strategy for nuclear fuel waste (used fuel) should define the end state for the waste and any necessary intermediate steps. The mandate of the NWMO is to evaluate and recommend a long-term waste management approach. I understand this to include recommending a suitable end state and that the NWMO must look at the following options for the end state: geological disposal, or perpetual storage either at the existing reactor sites or at a central site, and either above ground or below ground. Whatever the end state, intermediate steps, in particular, interim storage, will be required.
- Concern has been raised about the uncertainties associated with the future of nuclear energy in Canada and the impact on waste amounts. To me, such uncertainties are just a fact of life and should



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not be used as a rationale for not setting out a waste management approach, including the interim steps and the end state. ... While there are uncertainties, we do know that we already have a significant quantity of such waste in interim storage and it is a virtual certainty that we will continue to generate additional waste through the continued operation of the nuclear power plants that are currently operating and those that may be returned to service. Whether or not new plants will be built to replace existing plants, once the existing plants reach the end of their lives and are shutdown, remains to be seen.

- For a variety of reasons, I expect new plants will, in fact, be built. But whether they are or are not does not really change the need to 1) have defined a long term waste management approach and 2) have a program of work underway to work towards its implementation in a careful and adaptive manner, following a step wise approach that provides for periodic reviews and re-assessment of the approach at important decision points.
- Note that the amount of waste that might be generated over the next 50 to 100 years from the use of nuclear power in Canada would not, in my view, represent a limitation on the selection of one or the other of the waste management approaches that the NWMO is mandated to assess. To minimize the burden that we pass to future generations for managing a waste that we have produced and which we continue to produce requires that we maintain (and, as necessary and appropriate, improve) the interim storage practices that are currently used so that the waste remains safe until it is placed into its end state. It also requires that the end state be defined.
- Re the statement: *"The public has been adamant that the future of nuclear power be addressed before the decision on a management option for aged spent nuclear fuel is taken."* I'm not aware that there was general consensus on this point. In any case, the Porter Commission thought otherwise. One of their findings (and I am paraphrasing here) was that the present method of storage was satisfactory, and would be for some time, but that they recommended that a future moratorium be placed on nuclear development if satisfactory progress was not made towards the permanent disposal question. That seems to be the opposite of what was stated above. They wanted to solve the disposal issue (or at least make significant progress towards that) before proceeding with more development. The comment above seems to want to decide what future generations may want to do, and then deal with the problem that has been created in our lifetime.
- Some of these postings have called used nuclear fuel a problem. I am not sure it is. People are not harmed because used nuclear fuel is kept contained, retrievable and is re-usable. Engineered safety barriers protect the public and workers from harm. I support the use of nuclear energy because of the fact they are the only industry that MANAGES their waste product. What other industry could withstand the scrutiny of the questions posed in the "Asking the Right Questions" document? Other industry's solution to pollution is dilution. The fact that the "waste" stream is managed at nuclear power plants is a positive point...not a negative one.

## 4.5 ETHICS

- Ethical issues and our responsibilities to future generations need to be considered. There are a number of ethical considerations that have been enunciated (e.g. The liabilities of waste management should be considered when undertaking new projects. Those who generate the waste should take responsibility and provide the resources (financial, technological) for the management of the waste in a way that will not impose undue burdens on future generations. Wastes should be managed in a way that secures an acceptable level of protection for human health and the environment and affords to future generations at least the same level of safety which is accepted today. There would seem to be no ethical basis for discounting future health and environmental damage risks.
- A waste management strategy should not be based on a presumption of stable societal structure for the indefinite future, nor of technological advances: rather it should aim at bequeathing a passively safe situation which places no reliance on active institutional controls. To the extent possible, decisions made today for the long term management of wastes should not restrict future generations from taking a different decision. In discussing the questions of ethical responsibilities (ref 1) the Radioactive Waste Management Committee of the OECD Nuclear Energy Agency stated that: “from an ethical perspective, including long-term safety considerations, our responsibilities to future generations are better discharged by a strategy of final disposal than by reliance on stores which require surveillance, bequeath long-term responsibilities of care, and which may in due course be neglected by future generations”
- The Committee also noted : “The indefinite storage and monitoring strategy has indeed a number of technical and ethical arguments in its favour, particularly if it were to be accompanied by suitable efforts to ensure continued development or improvement of options for final solutions and to ensure that financial resources would be available when needed at all times in the future. One interpretation of the concept of sustainability would support such an approach, wherein one generation would pass on to the next generation a world with “equal opportunity”, and so on for the generations coming after, thus preserving options and avoiding the difficulty of predicting the far future. According to this idea of a “rolling present” the current generation would have a responsibility to provide to the next succeeding generation the skills, resources, and opportunities to deal with any problem the current generation passes on. However, if the present generation delays the construction of the disposal facility to await advances in technology, or because storage is cheaper, it should not expect future generations to make a different decision. Such an approach in effect would always pass responsibility for real action to future generations and for this reason could be judged unethical.
- A most significant deficiency of the indefinite storage strategy is related to the presumption of stability of future societies and their continuing ability to carry out the required safety and institutional measures. There is also a natural tendency of society to become accustomed to the

existence and proximity of storage facilities and progressively to ignore the associated risks. Such risks would actually increase with time in the absence of proper surveillance and maintenance, leading at some indefinite future time to possible serious health and environmental damage. There are many well-known examples of bad environmental situations inherited from the past which show that this deficiency of a waiting strategy should not be underestimated.” (References 1. OECD/NEA (Organization for Economic Co-operation and Development/Nuclear Energy Agency) The Environmental and Ethical Basis of Geological Disposal, A Collective Opinion of the NEA Radioactive Waste Management Committee, 1995).

- I do not think that we meet our ethical responsibilities to future generations by simply maintaining interim storage with the hope that sometime in the future some new technology will be developed for the long term management of the waste. It seems to me that we have an obligation of selecting what we believe is the best long term management approach and to do what we can to develop and demonstrate the technology for implementing the approach including the reference end state so that we pass to the future both a safe interim storage technology and a viable method of long term management. What criteria are used to recommend the ‘best’ option then becomes very important and that is an issue with which the NWMO is wrestling. Criteria include safety, particularly long term safety since we are talking about long term management, economics, engineering feasibility and in particular the feasibility of implementation with currently available technology, ethical considerations both intergenerational and intragenerational, public acceptability, aboriginal rights and values, etc. The NWMO should monitor technological developments, e.g. partitioning and transmutation, and even support research, to be in a position to take advantage of such developments within the framework of adaptive management. But, I believe that a long term waste management approach should be based on technology that is currently available and not one that assumes major advances in technological development.

## 4.6 TECHNICAL METHODS

- The NWMO has presented methods of storage or disposal that are technically feasible. The methods were from technically perspective feasible and acceptable as indicated by in the Seaborn Panel. The NWMO should focus on deep geologic storage and extended on site storage. The management, transportation and storage infrastructure as well as plans for sustainable financing will have to be developed before these concepts could be presented to the public for consideration. Telling the public that the details and financing will be figured out latter will not instill confidence or garner broad public support. There are no other methods that NWMO should consider.
- Two major points: (1) Transmutation cannot work without dissolution and reprocessing of the fuel - an operation that will remove one of the most effective barriers, the fuel itself; and (2) Even if it is decided to try this, transmutation can destroy only some of the radionuclides within reasonable time; many other radionuclides will be largely unaffected.

- Agree with the above comments, but regarding point (2): David Jackson's paper says (page 36) that "Transmutation is aimed at destroying the long-lived fission products. But it also says that even if today's research programs are successful, it will be many decades before these technologies can be deployed for practical purposes. Transmutation offers the potential for the ultimate mitigation of fuel waste but only in the long term." My point is that we should encourage such research and not foreclose the option.
- Geological disposal, if properly implemented, is a passively safe method of long-term management, that does not rely for its success on institutional control. The technology for geological disposal is currently available. Geological disposal is reversible. Most countries with nuclear power programs are following a step wise approach to implementation of geological disposal. Implementation can proceed in such a manner that a transition from storage to disposal is made over a period of time so that the benefits of storage (relatively easy retrieval and monitoring of the status of the waste) are achieved early in the process but that the transition to full passive safety can be made in the longer term when a future society has the confidence to do so. This concept has been enunciated in Switzerland and is called monitored disposal. Even after a disposal facility is closed to achieve passive safety, retrieval would still be possible and would be much less expensive than actually creating the disposal system in the first place. The Swiss have recently examined the long term safety impact of abandoning a disposal system during the long term monitoring stage and have shown, at least for the system the Swiss considered, that long term safety objectives could still be met.
- Geological disposal can also be thought of as a state of engineered safe-keeping. The waste is placed in a state where it could be left indefinitely, potentially forever, pending decision making in the future. To minimize the burden placed on future generations, such safe-keeping would not require further intervention to maintain safety, and to ensure safety, if institutional control were lost, it would be passively safe in the long term. To meet these requirements, the design of such a safe-keeping system, for a given category of waste, would not differ markedly from the designs being considered and being implemented today for disposal. (Please see the paper "Is safe-keeping of radioactive waste preferable to disposal? The importance of semantics" posted on the NWMO site).

#### **4.7 GENERAL COMMENT ON DISCUSSION DOCUMENT #11 - ASKING THE RIGHT QUESTIONS?**

- State what design methods considered (Reactor-Site Extended Storage, page 65) are actually being used at the different sites and why the different choices were made. These silos will last much longer than 100 years. Suggest that detailed pictures of these Lepreau silos be shown at the next Dialogue so that Participants may appreciate the probability of very long life.
- Research to 1994 had shown that "used fuel with undamaged sheaths (that is, >99.9% of all used CANDU fuel bundles) would maintain its integrity in wet or dry storage for at least 100 years; used

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CANDU fuel with defected sheaths would maintain its integrity in wet or dry storage for at least 50 years." Has new research shown that the 100 years was too optimistic? More detail is needed in Chapter 2 to clarify the time-frame for the current wet and dry storage systems (e.g. the age distribution of the waste, timeframe for safe storage at these locations, safety of the present system for the older waste and for long.) Was on-site storage capacity required at the time of siting?

- "With respect to on-site storage capacity, was it required at the time of siting and construction that provision be made for the capacity of on-site storage to be sufficient to handle the station's life-time production of used fuel waste?" I too would like to know the answer to this question. If the answer is "no" then what was the plan? If the answer is "yes", then for how long?
- I too would like to know the answer to this question. If the answer is "no" then what was the plan? If the answer is "yes", then for how long? Please tell us more about the regulatory, political, and technological history of on-site storage. Is there staff to check with the various utilities to see what the requirements were for the various sites? Or is it up to individual participants to request this information?
- I would assume that the original proposal to build a nuclear plant would include the assumption that on-site provision would be made for all of the used fuel that would be generated during the life of the plant. Any other presumption would not be logical.
- On page 12 it says, "Each of the following methods must be the sole basis of at least one approach. Does this mean that the NWMO could recommend all the three approaches (a), (b) and (c) be applied progressively? The best plan could be approach (b) – storage at nuclear reactor sites – followed maybe 100 years later by (a) deep geological disposal after all the energy in the "used fuel" has been utilized. However it is important that immediate selection of (b) or (c) should not preclude or stop some R&D work on (a). It would be desirable to continue to demonstrate that (a) deep geological disposal is technically sound so that future generations could make the decision on how and where to use deep geological disposal. Page 13 says that the Minister "shall select one approach". This seems to suggest that the Minister can choose only one of the above three "approaches". Why the apparent limitation?
- The NWMO could recommend what is suggested in the comment above (b and c in the short term and a in the long term) but the feds could reject this and say "a" (or "b" or "c") and they would be it. The NWMO organization could say "B" and the feds could say "A" (or vice-versa) and the NWMO would have to do as it is told. This is a serious matter no matter what one's perspective is on this issue. I would like to hear from the NWMO about how they view the very real possibility that they will be told what to do against their better judgement. How do they intend to respond if this is what happens? I do not think that the present generation thinks that burying nuclear waste in the ground is technically feasible, nor has it been shown to be thus. In Canada, we have spent about \$700 million on deep geological disposal. When \$700 million is spent on option "b" and "c" respectively, then we might have a fairer comparison to make in this discussion, but the NWMO only has three years.....

Everything is weighted one way, bury it in the shield, and that necessarily skews the discussion and the politics. It's simply undemocratic.

- Proposed changes to “Describing the Problem”, Chapter 2, p.25-29:
  - P. 25 paragraph 3  
The phrase "relatively small" serves no purpose when there is no comparative data. The hockey rink perspective needs a note that waste cannot be stored in such a close-packed manner and the size of storage used for the present nuclear fuel waste indicated.
  - P. 25 paragraph 4  
The phrase "under normal circumstances, there is no direct discharge of contaminants" is misleading. The existence of regulations, the level of permitted releases and the accepted radiological risk should be added in this section.
  - P. 25 -26 coloured box  
There is need for some rewording and some additional information in this section regarding types of radioactive materials, the use of the term “used fuel”, introduction of activation products of fuel impurities and the decay products.
  - P. 27 Graphs  
Several people have already noted the problem with the scale in the legends of these graphs. Fig. 2.2 should be removed and replaced by a table. A table of activities at time intervals over the first 100 years would demonstrate the rapid decline in the level of radioactivity and avoid misinterpretation
  - For Fig. 2.3, the legend should indicate that both the vertical axis and horizontal axis are logarithmic scales. The plot for "total" needs to be more legible.
  - P. 27 coloured box  
There is insufficient information in this section. The point could be added that despite the small amount of changed material inside the fuel, the chemistry has changed significantly and the fresh used fuel is about 10 million times more radioactive than natural uranium and its associated daughter products.
  - Reference 10 is to provide more information on the different isotopes in the used fuel over time. I suggest that "The Chemistry of Nuclear Fuel Waste Disposal" by Donald Wiles (dialogue member) be consulted for material to improve this section of background information.
  - Reference 11 is misprinted and I suspect that it was meant to be AECL EIS AECL 10721 COG 93-1 p. 24, which has Figure 2.3, however, this page does not have the statement indicated in the coloured box. This reference needs clarification.
  - The chemistry of the nuclear fuel waste is significantly different from natural uranium. Information on the overall potential health hazard of the nuclear fuel waste with time is essential information to have in this section or the next section on hazard. [There will be more recent work but to get things going see "Potential Health Hazard of Nuclear Fuel Waste and Uranium Ore," Kishor Mehta, G.R. Sherman and S.G. King, 1991, AECL ISSN 0067-0367]

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- P. 28, 29  
The section "Why Is Used Nuclear Fuel Hazardous?" needs to be rewritten to correct confusion, misleading information, and omissions.
  - The discussion on radiation and radioactivity is confused; the terms are used inappropriately in some places. Radioactivity is not clearly defined, nor are alpha particles, beta particles or gamma rays. The changing chemistry of the waste needs to be brought into focus. The concerns about radioactive components and chemically toxic elements of the waste that can be absorbed into biological systems need to be presented in some detail. Factors relating to biological damage from alpha and beta particle and gamma rays emitted by radioactive materials which have been inhaled, ingested, or crossed the skin barrier through a lesion need to be outlined. Information on the time frame of concern is needed.
  - Potential health hazard (PHH) should be presented with an explanation of the present definition of the form of the risk. The changing PHH with time should be explained. The controversy about impacts for risk being limited to fatal cancers and serious genetic effects as opposed to an early indication of unrepaired cellular damage (such as chromosomal aberrations) needs to be indicated. The risks from chronic exposures to low-levels of ionizing radiation, in addition to the background level, need to be addressed, including the controversy between those that claim some level of benefit and the body of work presenting concerns about the disruption of biological processes.
  - Fundamental facts, clear explanations, points of controversy, the position NWMO has taken and why are part of the background information that is needed to develop an understanding of why nuclear fuel waste is hazardous, and for how long
  - The Context section is a bit confusing. It states at the outset that "it is important to understand the story of nuclear energy in Canada". It does that, but it also goes into WW II, the bomb, the cold war and so on. As suggested it might be instructive to clarify that Canadian technology in the form of a research reactor together with indigenous Indian uranium was used to formulate the Indian bomb or as they described it a "peaceful nuclear device". Furthermore, it could be pointed out that Canadian uranium was at one time used in the U.S. and U.K. weapons programs but that since 1965 no Canadian uranium has been sold for use in any weapons programs. As point of clarification, it could be added that all Canadian sales of uranium are covered by safeguards arrangements and that such arrangements are generally considered to be the most stringent in the world.
  - The problem is not described correctly. Fundamental to participation is information. The material in Chapter 2, of Discussion Document 1, does not meet the need. Much of the information describing nuclear fuel waste and why it is hazardous is confusing, some is misleading and there are some errors. Information and discussion in critical areas is

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missing, notably biological effects of inhaled and ingested radioactive materials, how risk and potential health hazard [PPH] are presently defined, the PPH of the waste with time, and the time frame of concern. Also, describing the problem has to acknowledge areas of controversy and uncertainty. Revision of Chapter 2 is urgently needed.

- On pg. 12 of the discussion document, (2nd para) it says, "Nuclear fuel waste is defined...as irradiated fuel removed from a commercial or research nuclear fission reactor." (Note use of the word 'waste'). On pg. 23 they use the word, 'used' nuclear fuel rather than 'waste'. Presumably we are talking about the same thing. Other than this reference on pg. 12, there is nothing in this section mentioning fuel from research reactors other than on pg. 18 where it mentions almost in passing that there are reactors used for, "research or other purposes" and that AECL has nuclear fuel waste stored at two other locations and that this is from earlier research. I would assume that these reactors are the same ones we use to produce isotopes for medical purposes although the reference is only to research. If that is the case such references need to be expanded. ... Unless we are prepared to abandon the production of isotopes, there will be a problem with used fuel, even if we are to abandon the nuclear energy business - albeit on a much smaller scale.. The concerns are exactly the same.
  
- The number of fuel bundles in wet and dry storage at each site are listed in the Discussion Document, table 2.7, page 33 - where it indicates that in Point Lepreau, as of December 2002 - 40,482 fuel bundles were in wet storage and 52,920 were in dry. As of December 2003, there would be slightly more, but those numbers are not yet available.



## 4.8 DOCUMENTS POSTED

- 1) Accelerator-driven Systems and Fast Reactors in Advanced Nuclear Fuel Cycles -  
A Comparative Study:  
<http://www.nea.fr/html/ndd/reports/2002/nea3109-ads.pdf>
- 2) The Nuclear Waste Fuel Act:  
<http://laws.justice.gc.ca/en/N-27.7/text.html>
- 3) Regulatory Guide G-219:  
[http://www.nuclearsafety.gc.ca/pubs\\_catalogue/uploads/G219\\_e.pdf](http://www.nuclearsafety.gc.ca/pubs_catalogue/uploads/G219_e.pdf)  
  
Regulatory Guide G-206:  
[http://www.nuclearsafety.gc.ca/pubs\\_catalogue/uploads/G206\\_e.pdf](http://www.nuclearsafety.gc.ca/pubs_catalogue/uploads/G206_e.pdf)
- 4) Regulatory Policy on Managing Radioactive Waste (P290)  
The CNSC is currently working on P-290. Please refer this document:  
[http://www.nuclearsafety.gc.ca/pubs\\_catalogue/uploads/P290\\_e.pdf](http://www.nuclearsafety.gc.ca/pubs_catalogue/uploads/P290_e.pdf)
- 5) Legal and Administrative Provisions for Radioactive Waste Management Within the North  
American Free Trade Agreement (NAFTA)  
[http://www.nwmo.ca/adx/asp/adxGetMedia.asp?  
DocID=248,211,199,20,1,Documents&MediaID=755&Filename=74\\_NWMO\\_background  
\\_paper.pdf](http://www.nwmo.ca/adx/asp/adxGetMedia.asp?DocID=248,211,199,20,1,Documents&MediaID=755&Filename=74_NWMO_background_paper.pdf)

## **APPENDIX 5: LIST OF DOCUMENTS RECEIVED**

## APPENDIX 5: LIST OF DOCUMENTS RECEIVED

The following are the materials and references provided by participants during the dialogue process.

Date Tabled/ Received	Originator	Mechanism	Content/Topic/Title
North Bay (March 4 and March 27)			
March 3, 2004	Derek Paul	Tabled at session	<ul style="list-style-type: none"> <li>Article “Physics and Philosophy” published in La Physique au Canada, Juillet/Aout, 1996</li> </ul>
March 9, 2004	Derek Paul	e-mailed to NWMO	<ul style="list-style-type: none"> <li>Brief to the NWMO (March 5, 2004, first draft )</li> </ul>
March 27, 2004	Derek Paul	Tabled at session	<ul style="list-style-type: none"> <li>Brief to the NWMO II</li> </ul>
March 27, 2004	Dougall McCreath	Referenced during session	<ul style="list-style-type: none"> <li>Peter M. Sandman “Responding to Community Outrage” 1993, American Industrial Hygiene Association</li> <li>Video “Risk = Hazard + Outrage” AIHA (1991)</li> </ul>
March 27, 2004	Ido Vettoretti	Provided to NWMO	<ul style="list-style-type: none"> <li>Web site reference for Sudbury Soil Study (<a href="http://www.sudburysoilstudy.com">www.sudburysoilstudy.com</a>)</li> </ul>
March 30, 2004	Derek Paul	e-mailed to NWMO	Brief to the NWMO II: Reprocessing & Transmutation
Ottawa – March 8 and 25th			
March 8, 2004	Marc Chenier	Tabled at Session	<ul style="list-style-type: none"> <li>2 page overview of “Report of the Seaborn Panel on High-Level Nuclear Wastes”</li> </ul>

Date Tabled/ Received	Originator	Mechanism	Content/Topic/Title
March 8, 2004	Marc Chenier	Tabled at Session	<ul style="list-style-type: none"> <li>18 pages Seaborn Panel Report – passages from Chapter 5</li> </ul>
March 25, 2004	Don Wiles	Tabled at Session	<ul style="list-style-type: none"> <li>4 pages “Points that we Can Agree On”</li> </ul>
March 25, 2004	Mary-Lou Harley	Tabled at Session	<ul style="list-style-type: none"> <li>UCC Principles to Frame the Discussion on Nuclear Fuel Waste Based on Proposed Principles of World Council of Churches</li> </ul>
March 25, 2004	Dave Martin	Tabled at Session	<ul style="list-style-type: none"> <li>Nuclear Waste Watch Position Statement</li> </ul>
March 25, 2004	Colin Allan	Tabled at Session	<ul style="list-style-type: none"> <li>Excerpt from AECL 1994 EIS on the Concept for Disposal of Canada’s Nuclear Fuel Waste</li> </ul>
March 25, 2004	Colin Allan	Tabled at Session	<ul style="list-style-type: none"> <li>Excerpt from AECL Technical Record TR-767 COG-96-582-1 “Radiological and Chemical Toxicity of Used CANDU Fuel” 1996</li> </ul>
March 25, 2004	Colin Allan	Tabled at Session	<ul style="list-style-type: none"> <li>Excerpt from NAGRA Technical Report 02-05 Safety Report Demonstration of Disposal Feasibility for Spent Fuel, Vitrified High-level Waste and long-lived intermediate level waste (December 2002)</li> </ul>
March 25, 2004	Peter J. Dyne	Provided to NWMO	<ul style="list-style-type: none"> <li>AECL “Managing Nuclear Wastes” booklet from 1970’s</li> </ul>
Fredericton (March 10, April 3)			
April 3, 2004	Neil Craik	Tabled at Session	<ul style="list-style-type: none"> <li>Article “Economical Dry Storage of Spent CANDU Fuel in the CANSTOR Module Monolith” by J.C. Dunlop, AECL</li> </ul>

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Date Tabled/ Received	Originator	Mechanism	Content/Topic/Title
April 7, 2004	Gordon Dalzell	E-mailed to DPRA	<ul style="list-style-type: none"><li>• Submission by Saint John Citizens Coalition for Clean Air</li></ul>
April 3, 2002	Shirley Farlinger	Read from at Session	<ul style="list-style-type: none"><li>• Science for Democratic Action Vol 8 No 3</li><li>• Waste Transmutation</li></ul>

## **APPENDIX 6: RATIONALE FOR PARTICIPANT CATEGORIES**

### 6.1 Participant Category Rationale

## APPENDIX 6: RATIONALE FOR PARTICIPANT CATEGORIES

### 6.1 PARTICIPANT CATEGORY RATIONALE

NWMO has stated that the communities of interest for the long-term management of nuclear fuel waste are numerous and diverse. They have identified communities of interest to include, in addition to the Canadian public at large, governments; non-profit and non-governmental organizations from civil society (health, social sciences, energy, environment, faith, professional societies, culture, education, development, civil rights, labour, etc.); and business and for-profit interests.

This was used as the foundation for the major categories of participants for the dialogues, the list was adjusted to reflect the various other engagement activities underway (e.g. citizens dialogues) and to bring in those who not be well-represented (e.g. youth).

While NWMO is collaborating with aboriginal organizations to implement aboriginal specific dialogue processes, it was felt that aboriginal peoples and organizations should also be invited to the dialogue.

Category	
Local/Municipal Government	Those providing and promoting community well-being and development
Education/Academic	Those administering, providing, and supporting education and research
Environment	Those promoting and providing services in environmental conservation, pollution control and prevention, environmental education and health, and animal protection.
Health	Those that engage in health-related activities, providing health care, administration of health care services, and health support services
Social, Cultural and Faith Perspectives	Those providing human and social services to a community or population; promoting religious beliefs or faith based perspectives; those organizations and activities in fields of culture and recreation
Industry/Economic	Those promoting or providing
Professional Societies	Those promoting, regulating, and safeguarding business, professional interests
Labour	Those promoting and safeguarding employee and labour interests
Youth	Those promoting programs and providing services to encourage and engage youth in society
Emergency Preparedness	Those with responsibilities for emergency response and transportation
Consumer	Those promoting programs and providing services to educate and advocate on behalf of consumers.