Final Report on the National Inuit-Specific Dialogues on the Long-Term Management of Nuclear Fuel Waste in Canada

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INUIT TAPIRIIT KANATAMI

Determining the National Inuit-Specific Perspective

Introduction:

On November 15, 2002 the Nuclear Fuel Waste (NFW) Act was brought into force by the Federal Government. The NFW Act was passed to confirm that the Government of Canada was meeting its responsibilities regarding the Long-Term Management of Nuclear Fuel Waste and set in motion the processes necessary for the successful implementation of the Act. The NFW Act was developed as a result of extensive consultation with the public and stakeholders by the Government of Canada in 1996 and 1998. In 1998 the Government of Canada Response to the Seaborn Panel, the Government further included that it would undertake a participation process for Canada's Aboriginal peoples.

In discussions with the Nuclear Waste Management Organizations (NWMO) and Natural Resources Canada (NRCan) representatives, ITK staff members had underlined the fundamental importance of Inuit becoming involved in the formation and development of management options that are required by the Nuclear Fuel Waste (NFW) Act. It was expressed that it is essential that a comprehensive public dialogue with Inuit is conducted in order to develop long-term management approach options, which will be included in the NWMO submission to the Minister of Natural Resources Canada on November 15, 2005. It was furthermore stated that it is of great importance that this dialogue takes place in a relevant, meaningful, and culturally appropriate way that takes into account the remoteness, as well as language needs of Inuit communities that must be consulted throughout this process.

In the past, Inuit have been opposed to the Long-Term Management of Nuclear Fuel Waste in the Canadian Arctic. The need had remained, however, to dialogue with and educate Inuit regarding the possible benefits or effects that will accompany the Long-Term Management of Nuclear Fuel Waste. Of particular interest to Inuit is, for example, the risk of transboundary problems associated with the Long-Term Management of Nuclear Fuel Waste. In order to put together the Inuit perspective on this matter, ITK held dialogues in the four Inuit land claim regions (Nunavut, Inuvialuit Settlement Region, Nunavik and Nunatsiavut). As a result, ITK proposed and is currently in the final stages of a three-year national dialogue process within the four Inuit Land Claims Regions on the issue of the Long-Term Management of Nuclear Fuel Waste in Canada, as mandated in section 12(7) of Bill C-27. These dialogues took place in the following locations.

1. Iqaluit (Nunavut) - November 9-10, 2004
2. Inuvik (Inuvialuit Settlement Region) - November 17-18, 2004
3. Kuujjuaq (Nunavik/northern Québec) - January 27-28, 2005
4. Makkovik (Nunatsiavut/Labrador) - February 9-10, 2005

Throughout these national dialogues, ITK staff emphasized to the participants of each of the regional Inuit-Specific Dialogues that ITK does not endorse any of the proposed approaches to Nuclear Fuel Waste management. Rather, these dialogues were intended to provide Inuit in Canada with information on the issue of the Long-Term Management of Nuclear Fuel Waste, as well as to ensure that Inuit can have a

voice in the dialogue process, which is currently in its final stages. This stance was adopted to act in tandem with the already existing resolutions that were issued by both the Inuit Circumpolar Conference (ICC), in 1977, and in 1997 by Nunavut Tunngavik Incorporated (NTI) on this subject matter. These resolutions (please see Appendices D and E) outline ICC's and NTI's opposition to the storage/disposal of any type of chemical, biological and specifically nuclear waste in the Arctic.

It is important to note here that clear overlaps existed with regard to the information provided (please see Appendix B for the presentations provided at each of the Inuit-Specific Dialogues) at the National Inuit-Specific Dialogues and the expectations participants had of these dialogues. It is, however, also important to note that some questions, expectations and comments, although on related subjects, did fall outside of structure of these dialogues (see Appendix A) as no information on the subject of the Long-Term Management of Nuclear Fuel Waste in Canada had previously been available in the four Inuit land claims regions prior to the dialogues which were conducted by ITK staff during the 2004-2005 term.

Description/Logistics of the Dialogues

Throughout 2004-2005, ITK, with the help of the National Task Force Members of the Inuit land claims organizations, has been actively engaged in the organization, coordination and execution of the National Inuit-Specific Dialogues on the Long-Term Management of Nuclear Fuel Waste in Canada.

The four Inuit-Specific Dialogues were very well received in each of the Inuit land claims regions. The participants of each of the dialogues were happy with the level of relevant information that was provided (in the form of information packages and expert presentations that were held during each of the Inuit-Specific Dialogues) on this subject, the translation of the documents provided, as well as with the general coordination that was necessary in order to conduct these dialogues effectively and efficiently.

Difficulties did, however, arise with respect to the logistical arrangements of the NWMO experts. Although the meeting dates and locations were provided by ITK staff to the NWMO well in advance of the dialogues taking place, it appeared that the majority of the NWMO representatives that presented at these dialogues were not provided with a great deal of time to prepare nor to make their personal travel and accommodations arrangements.

The particular problems experienced can be seen as directly resulting from the NWMO's inability to take the northern situation into consideration when planning their upcoming activities. Weather, length of travel and the size of a community that is being visited for the purpose of these types of meetings must always be taken into consideration when attending or planning such meetings. This unfortunately also resulted in a perceived lack of sincerity on the part of the NWMO by dialogue participants.

Final Recommendations/Comments (listed by Inuit Land Claims Region)

The discussions, which took place at each of the Inuit-Specific Dialogues were extensive and covered a number of areas (the proposed management options for nuclear fuel waste, effects of radiation exposure, transport of nuclear fuel waste, uranium mining, and alternative energy sources) in relation to the matter. As a result of this and the varying influences that guided each discussion within each of the four Inuit land claims regions, the recommendations and comments from each of the regional Inuit-Specific Dialogues are included below.

Nunavut Recommendations:

Preamble:

These recommendations are provided with the understanding that they are informal submissions and are not the result of a consultation process that took place within the Nunavut territory.

Not enough time and funding were allocated in order to conduct a formal consultation that would be effective, meaningful and culturally appropriate. In section 12(7) the Act states that they shall consult the general public and in particular Aboriginal people. The meeting that has taken place over the past couple of days cannot be considered a consultation under this act. It does not warrant the provisions under the Act. (see p. 5 of the act) Consultation with southern Aboriginal peoples cannot be understood as consultation with Inuit.

The meeting that has taken place during Nov. 9-10, 2004, was a positive meeting, which has resulted in the provision of information and educational materials to those in attendance.

Attendees present at this meeting specified that they could not provide formal feedback that is representative for their organizations or communities as they have not yet been able to take the information provided back to their constituents. (With the exception of NITI who already has a resolution in place on this matter)

Even if there was funding, it is not a matter for these organizations to take the lead in doing this. It should be the NWMO and NRCan, with the assistance of the Inuit Tapiriit Kanatami, who should conduct meaningful and formal community consultations within the Nunavut Settlement Area (NSA). The regions should not be expected to take the lead. The consultations should be initiated and organized by the NWMO and NRCan with Inuit directing the process. Formal consultations with Inuit should be initiated in addition to the current dialogue process. Meaningful consultations are defined as culturally appropriate, time sensitive, (look at provision of materials, providing them ahead of time, providing maps and pictures as opposed

to just providing the info and asking for comments – look at methods that would be most useful and beneficial) – prior notification should be reasonable.

This type of process would represent a culturally and geographically appropriate initiative for Inuit to take a formal regional and national position on the matter of the Long-Term Management of Nuclear Fuel Waste in Canada.

Dialoguing with Inuit of Nunavut on the Long-Term Management of Nuclear Fuel Waste with the NWMO prior to November 15, 2005 is important. However, Inuit and other Nunavumiut are citizens of Canada too and have been left out of some of the NWMO processes (such as the Advisory panel, the Scenarios Team and the Ethics panel).

Inuit have values unlike others. Inuit know a lot about the land and the animals on the land. Inuit also have agreements and processes in place that require for Inuit to have a voice.

It should also be recognized that a resolution by NTI does already exist (please see Appendix D), but that it does not prevent the attendees of the Nunavut dialoguing commenting on the L-T Management of Nuclear Fuel Waste in Canada as a whole. However, due to the uncertainties of climate and weather conditions, storage, disposal or transportation of Nuclear Fuel Waste in Nunavut is not acceptable now or in the future.

Specific Recommendations:

1. The NWMO and NRCan must do more research/risk assessments before actually making a choice on the options for the Long-Term Management of Nuclear Fuel Waste;
2. The NWMO and the Government of Canada must take the necessary steps and conduct research to develop alternative energy sources in Canada with the goal in mind to eventually stop the production of Nuclear Fuel Waste;
3. To conduct ongoing research on methods of eliminating the hazardous nature of Nuclear Fuel Waste;
4. Use a combination of options (Canadian shield – but shallower in the ground and keep it accessible – don't fully encapsulate it – reason: may develop technologies to destroy the waste in the future);
5. Regardless of the option selected – proper consultation should take place across the country to inform the public of what the selected option means – a formal consultation should take place with the public;
6. All written materials provided to the general public should be released in the appropriate language (incl. Inuktitut and Inuinnaqtun).

Current comments:

- Increased education to the public including and especially in the North is necessary

- Getting into the logistics of language, education issues, transportation issues – as it applies to community relations/consultations/dialogues – outline difficulties and obstacles regarding the organization of these types of events in the North
- Suggestion of an extended deadline as there isn't enough time to properly educate the public on the issue of the Long-Term Management of Nuclear Fuel Waste
- Traditional land use should be included in the community well being objectives of the NWMO assessment
- Traditional Knowledge (IQ) is important to the nature of the value of human life, wild life, the land, the sea, our ecosystem – in the South food comes from a store – in the North the land is the food source/ecosystem/the land – Inuit will take every measure they can to protect it!
- Consultation regarding each of the proposed approaches has not taken place with Inuit. To date dialogues have taken place, but a consultation has not been initiated. In addition; one dialogue has taken place for 27,000 people. One dialogue in one community is not appropriate consultation in any court of law.
- The Nunavut Land Claims Agreement (NLCA) constitutionally entrenches rights of Nunavut Inuit. Consideration of any economic regions falling within the NSA without Inuit involvement and approval is contrary to the NLCA, which takes precedent over legislation like the NFW Act.

Inuvialuit Settlement Region Recommendations:

Preamble:

These recommendations are provided with the understanding that they are informal submissions and are not the result of a consultation process that took place within the Inuvialuit Settlement Region.

Not enough time and funding were allocated in order to conduct a formal consultation that would be effective, meaningful and culturally appropriate. Section 12(7) the Nuclear Fuel Waste Act states that they shall consult the general public and in particular Aboriginal (Inuit, First Nations, Metis) people. The meeting that has taken place over the past couple of days cannot be considered a consultation under this act.

It is, however, the case that all present at this dialogue feel that an in depth and fully funded consultation consisting of all 6 communities in the Inuvialuit Settlement Region should take place. Those involved in the current dialogue further feel that a full consultation should include all components of Inuvialuit society.

Further, all activities that affect the Inuvialuit Settlement Region must follow the processes outlined by the Inuvialuit Final Agreement prior to commencing.

Therefore, any activities that do not follow these processes are in contravention of the Land Claim and are therefore illegal in nature.

Regarding the subject of the Long-Term Management of Nuclear Fuel Waste, the attendees of this dialogue took the following positions.

- To shut down existing reactors, stop the production of Nuclear Fuel Waste, and stop any continued production of nuclear reactors until a way has been found to dispose of Nuclear Fuel Waste;
- To keep the Nuclear Fuel Waste at the existing reactor sites near the population centers;
- To support the idea of rolling stewardship (decide on the on-site option for the next 200 years and then revisit the issue of the management of Nuclear Fuel Waste at that time);
- To hire unaffiliated and independent scientists to conduct a study on a management approach for the Long-Term Management of Nuclear Fuel Waste;
- To increase research in the area of containment methods (e.g. dry storage containers);
- To increase the information provision on the subject of the Long-Term Management of Nuclear Fuel Waste to the Canadian public (including in the North);
- To organize a tour of a nuclear reactor in order to obtain all available information of the issue. Participants should include representatives from each of the Inuit Land Claims Region.

<u>Option-Specific Recommendations</u>:

1. All three options that were provided to the attendees of this dialogue were considered unacceptable as a method for the Long-Term Management of Nuclear Fuel Waste. However, the option of on-site storage was deemed the most workable at this point in time for the following reasons.

2. Transportation is not required;

3. Transportation represents unacceptable risks that are involved in transportation;

4. Generally, as the fuels cool over the first few hundred years, the danger to the public decreases exponentially.

5. It is generally thought that the transport of radioactive waste poses a much greater danger to the public and the environment than temporary or intermediate on-site storage, using responsible methods.

6. Transportation of waste spreads the risk factor across thousands of miles and hundreds of communities across the country.

Location:
Attendees at this dialogue felt that the current location of the reactor sites and current storage sites (near population centers) is favourable as it ensures that this subject receives the attention that it requires. The removal of these materials to a remote location may not ensure a continued focus by the general public. A continued focus on a possible management method is required in order to decide on how to proceed in the short and long term.

Guardianship:
The nuclear guardianship ethic must guide our choices.

Until a solution is found only the rolling stewardship solution is deemed an acceptable approach.

Each generation has the responsibility to preserve the foundations of life and well-being for those who come after. To produce and abandon substances that damage following generations is morally unacceptable. Given extreme toxicity and longevity of radioactive materials, their production must cease.

As Canadians we have the responsibility to protect our environment and inform the future generations on this subject. Future generations have the right to know about the nuclear legacy bequeathed to them and to protect themselves from it.

Nuclear reactors and weapons productions facilities should be permanently closed.

The attendees of this dialogue further stated their opposition to the other two proposed options for the following reason:

These options would require:

- Transporting highly radioactive waste from the site of generation to create new sacrifice areas will not eliminate the problem;
- They are not feasible options as the general Canadian public (north and south, east and west) would not accept the moving of nuclear wastes to one central site (not to have it in their backyards);

It was further stated that the participants of this dialogue that they did not want Nuclear Fuel Waste in the ISR, but that they also did not want to advocate for the materials to be moved anywhere else either.

Nunavik Recommendations:

Preamble:

These recommendations are provided with the understanding that they are informal submissions resulting from a regional dialogue, which took place in Kuujjuak, Nunavik on January 27-28, 2005.

Not enough time and funding were allocated in order to conduct a formal consultation that would be effective, meaningful and culturally appropriate. Section 12(7) the Nuclear Fuel Waste Act states that they shall consult the general public and in particular Aboriginal (Inuit, First Nations, Métis) people. The meeting that has taken place over the past couple of days cannot be considered a consultation under this act.

Attending at this meeting were representatives from the Kativik Environmental Advisory Committee (KEAC); National Inuit Youth Council (NIYC); Nunavik Hunters, Fishers and Trappers Association; KRG; Northern Village of Kuujjuak; Makivik Corporation; and individual community members.

Those present stated their appreciation that ITK had organized this workshop and that ITK staff had ensured that both sides of the issue had been made available to the regional participants of this meeting.

Draft Recommendations:

At this meeting the following was agreed on by those present:

- Attendees could not understand why the question of the disposal/management methods of Nuclear Fuel Waste was posed to this region, as the region neither consumes energy derived from Nuclear Reactors nor produces Nuclear Fuel Waste as a result of the energy production process;
- Although attendees understood that this is an issue of concern to all Canadians, they did not feel that the region should have to shoulder the burden of having to deal with the issue of Nuclear Fuel Waste in any manner;
- None of the options that were presented to attendees contribute to a long-term solution to the nuclear fuel waste problem at the national level. Any decision on which option to pick will be misinterpreted as consent to the nuclear industry's activities on this matter;
- Attendees further stated clearly that they did not want to choose any of the proposed options. Rather they stated that nuclear energy should cease to be produced (and the resulting Nuclear Fuel Waste should not continue to be accumulated) and that focus should be placed on solving the current issue of managing the existing Nuclear Fuel Waste;

- Attendees further stated that an emphasis should be placed on research that would examine alternative and low risk energy sources and that extensive funding should be directed into this area (including energy efficiency research - how to use more efficiently);
- Attendees wanted to further state clearly that they are in direct opposition to any Nuclear Fuel Waste to be stored, disposed of or transported through their territory. They further stated that these materials should also not be stored, disposed of or transported through territories near or adjacent to Nunavik (this includes transportation through the Northwest Passage and other northern routes);
- Attendees further wanted to send a clear message to the Minister (NRCan) and the province of Quebec that they are advocating the discontinuing of the use of energy derived from nuclear reactors (shutting down reactors);
- Attendees felt that the NWMO should be able to consider options (such as the discontinuation of energy derived from nuclear reactors) within a public dialogue process (such as what was proposed by Seaborn panel);
- Attendees are in direct opposition to the reprocessing of Nuclear Fuel Waste in Canada, as it will result in the possible extraction of plutonium;
- Attendees stated that the NWMO's code of ethics should always be kept in mind and to carry that code to the end of this process (in a meaningful manner);
- Attendees further stated that the Government of Canada should maintain its promise to hold public hearings on the question whether nuclear reactors should be shut down or not (as had been intended by Dr. Seaborn);
- Assuming that the nuclear industry doesn't shut down overnight – an impartial and independent organization (not funded by the industry) should direct and conduct a public hearings process on the issue of whether or not nuclear energy should be continued to be used in Canada;
- Attendees recommended that a balanced educational program (using multi-media) on the broad issue of Nuclear Energy (uranium mining, production of nuclear energy, disposal/management of NFW, Environmental and Health impacts of Nuclear Fuel Waste) should be specifically designed for the North and that this program should be initiated across northern Canada. This type of educational program must be designed and conducted by external (from the Gov't), independent agencies and/or National organization (Aboriginal or otherwise).

Attendees at this dialogue hoped that science would solve the problem of the disposal/management of Nuclear Fuel Waste some day. This is, however, not possible today. Until the time until there is a completely satisfactory solution to the problem of Nuclear Fuel Waste, nuclear reactors should be shut down and no more Nuclear Fuel Waste should be generated at this point in time.

Nunatsiavut Comments:

Preamble:

These recommendations are provided with the understanding that they are informal submissions resulting from a regional Inuit dialogue, which took place in Makkovik, Nunatsiavut (Labrador) on February 9–10, 2005.

It was formally stated by the participants of this meeting that it is not recognized as a consultation process, but as an information dialogue. The reasoning for this is that not enough time and funding was allocated to conduct a formal consultation that would be effective, meaningful, and culturally appropriate. Section 12(7) of the Nuclear Fuel Waste Act states that they shall consult the general public and in particular Aboriginal (Inuit, First Nations, Métis) people. The meeting that has taken place over the past couple of days cannot be considered a consultation under this act.

In order for this to be considered a consultation, more time and funding should have been allocated in order to conduct full community consultations in each community in Nunatsiavut.

Some present also stated that it would be very difficult to have recommendations resulting from this dialogue, as there are not enough people present from the region to have a valid set of recommendations as a result. It is not representative.

Comments:

- All present were in opposition to the storage/disposal of Nuclear Fuel Waste in Nunatsiavut and the Canadian Arctic;
- Nuclear Fuel Waste should remain on-site as opposed to moving it into an unpopulated or remote area.
- All present came to agreement that all three of the nuclear waste management options are extremely dangerous. More emphasis should be placed on safety and elimination Nuclear Fuel Waste; however, for the time being this seems the only option available;
- Participants were concerned about the possible risks involved during transport;
- The Government of Canada should in the House of Commons declare that the Arctic is a Nuclear Free Zone; Inuit in Nunatsiavut will be encouraged to contact their MPs to raise the issue in Parliament;
- In addition any lands recognized as Inuit home lands should be included as a Nuclear Free Zone;
- Landuse/use of sea or other environs should be included in a point here!!!
- Statement emerged that both the producers and the consumers should be responsible for the safe storage/disposal of nuclear fuel waste;
- Problems with contaminants already in the system—don't want to add any more;
- Ask the Government of Canada and the producers of waste to put a lot more funding into finding ways of getting rid of the Nuclear Fuel Waste;
- The government should look into the development of alternative energy options;

- More education needs to take place in general as well as within the public school system on the issue of nuclear power and the resulting Nuclear Fuel Waste;
- Need to protect already existing industry and resources that are already present (land, water, animals, environment);
- Those present agreed that the Government should stop calling nuclear energy a clean energy as it results in the production of Nuclear Fuel Waste;
- The nuclear industry should be required to conduct studies using external experts in order to conduct scientific studies into what effects radiation has on human health and the environment when exposure occurs;
- The NWMO should be an independent body—and not led by industry (as outlined by the Seaborn Panel);
- For amount of nuclear waste produced and the amount of electricity produced—what levels/amounts of energy are produced by the use of other energy sources (use of fossil fuel, etc.)—also questioned safety of these approaches (incl. emissions and pollution as a result); comparison studies need to be presented to the public.

Around this table there wasn't consensus as some felt that the nuclear industry should be shut down, whereas others did not feel this way. Their comments were as follows:

- Nuclear Industry should be shut down and should put more emphasis on the Canadian Government and industry to get rid of the tailings and waste;
- Health and safety should be considered before production;
- It was stated that representatives of the nuclear industry should be brought into communities via consultation process, to provide their points of view on this subject.

Final comment:

Inuit are starting to become educated about and aware of the hazards of nuclear waste. However, Inuit would like every community in Canada (with a special focus on Ontario—or on those who use electricity generated by nuclear power) to make a decision for themselves in terms of whether or not to continue with nuclear power; don't want to tell others what to do within their territory. A national education program and full consultations across Canada should take place as opposed to the current dialogue process.

Conclusion

The relationship between Inuit and their environment continues to be a fundamental element of Inuit culture and identity. The environment is integral to Inuit social, cultural and economic development and well-being, to the extent that it is difficult to separate the health of the environment from the health of the people.

As a result it was very important for Inuit to participate in the national dialogue process, which was being conducted by the NWMO on the subject matter of the

Long-Term Management of Nuclear Fuel Waste in Canada. As the storage/disposal of Nuclear Fuel Waste has potential safety, environmental and health implication, participation in this dialogue process represented an important opportunity for Inuit to provide their opinions and feedback to both NRcan and the NWMO on this subject matter; thereby recognizing the importance of the Inuit voice in the ongoing national dialogue process.

Although the National Inuit-Specific Dialogues cannot be considered a formal consultation process with Inuit, consensus was reached by the participants of the four Inuit-Specific Dialogues on the Long-Term Management of Nuclear Fuel Waste on the following items.

- Not enough time and funding were allocated in order to conduct a formal consultation that would be effective, meaningful and culturally appropriate. In section 12(7) the Act states that they shall consult the general public and in particular Aboriginal people. The dialogues, which took place within the four Inuit Land Claims Regions cannot not be considered consultations under this Act.

- Inuit in all four Land Claims Regions stated their complete opposition to the storage of Nuclear Fuel Waste in the Canadian Arctic and specifically speaking, their opposition to the storage of Nuclear Fuel Waste in their Land Claims Regions (which include marine areas and aerospace).

- The participants at each of the four Inuit-Specific Dialogues further stated their complete opposition to the storage/disposal and transport of Nuclear Fuel Waste in areas adjacent to Inuit owned lands (Nunavut, Inuvialuit Settlement Region, Nunavik and Nunatsiavut), Inuit co-managed lands and land governed by Inuit Land Claim Agreements.

- As Aboriginal Canadians, Inuit are also in opposition to the storage/disposal of Nuclear Fuel Waste anywhere else within Canada and insist that Nuclear Fuel Waste should remain on the site of existing nuclear reactors. The reason for this stance is that although Inuit directly oppose the storage/disposal/transport of Nuclear Fuel Waste on the "said lands," Inuit as Canadians also do not advocate that Nuclear Fuel Waste should be stored on any new sites.

- A follow-up process must take place in order for these dialogues to conclude effectively;

- Decision-making structures that may be initiated with regards to the implementation of a final management approach for the disposal/storage of Nuclear Fuel Waste, must include that mechanisms for direct community involvement are implemented and that potentially affected communities have the right to refuse to host a Nuclear Fuel Waste disposal/storage site;

- As Secondary Wastes (materials exposed to radiation within nuclear power plants) are also hazardous to human and environmental health, these wastes must be included when addressing the issue of the Long-Term Management of Nuclear Fuel Waste in Canada;

- As there will be a need to communicate the results from the Government of Canada reports to the Inuit Land Claims Regions, an Inuktitut/English terminology dictionary must be developed in order to facilitate the information distribution and translation of materials regarding the subject of the Long-Term Management of Nuclear Fuel Waste in Canada;

- Inuit encourage the honest and accurate disclosure of the true costs associated with the Nuclear Industry (development of technologies/costs of management methods) and where/to what degree these costs are passed on to the general public;

- The Nuclear Industry should in no way interpret the findings contained within the feedback provided by Inuit as an encouragement or acceptance of an increase in the production of nuclear energy and the subsequent production of Nuclear Fuel Waste;

- The Government of Canada must take the necessary steps to conduct research and develop alternative energy sources in Canada.

In conclusion the participants of the National Inuit-Specific Dialogues on the Long-Term Management of Nuclear Fuel Waste in Canada stated that the production of nuclear energy and the subsequent problem of the Long-Term Management of Nuclear Fuel Waste in Canada represent a volatile issue that will continue to be present in 30 years, 60 years or in 300 years. It was further stated that the production of nuclear energy was initiated without a thought towards a means of disposing of the inevitable and highly toxic byproduct of Nuclear Fuel Waste. As such it represents a very serious waste problem, which goes against Inuit ethics with regards to environmental protection and the inseparability of environmental and human health.

As such it is important to emphasize that environmental protection in the Canadian Arctic is of utmost concern to Inuit and that as Aboriginal Canadians, Inuit consider the implications of additional locations for the storage or disposal of Nuclear Fuel Waste a very serious problem to all Canadians.

Recommendations/Comments on Alternative Energy Sources in Canada:

The subject of renewable energy sources and the need to conduct research into this area by the Canadian Government was discussed at length at each of the four Inuit-Specific Dialogues. During the dialogues which took place in three of the four Inuit land claims regions it was stated that the Government of Canada must take the necessary steps to conduct research and develop alternative energy sources in Canada

with the goal in mind to eventually replace nuclear energy with alternative and clean energy options and to stop the production of Nuclear Fuel Waste.

One region (Nunatsiavut) could, however, not reach consensus on this matter. As a result their feedback regarding this matter contains two sets of comments. The initial set of comments included an emphasis on the conducting of research on alternative energy sources, but it did not include any comments regarding the elimination of nuclear reactors as sources of energy. The secondary set of comments, however, advocated that the Nuclear Industry in Canada should be shut down and that more emphasis should be placed on the Canadian Government and Industry to eliminate the production of Nuclear Fuel Waste in Canada.

Appendix A: Expert Presenters for the National Inuit-Specific Dialogues on the Long-Term Management of Nuclear Fuel Waste in Canada

Expert Presenters for the four Regional Inuit-Specific Dialogues on the Long-Term Management of Nuclear Fuel Waste in Canada

Name	Organization	Location of Presentations
Jo-Ann Facella	Program Manager, Nuclear Waste Management Organization (NWMO)	Iqaluit, Nunavut
Tony Hodge	Senior Advisor, Nuclear Waste Management Organization (NWMO)	Inuvik, Inuvialuit Settlement Region
Michael Krizanc	Communication Manager, Nuclear Waste Management Organizations (NWMO)	Kuujuak, Nunavik; Makkovik, Nunatsiavut
Dr. Gordon Edwards	Coalition for Nuclear Responsibility	Iqaluit, Nunavut; Inuvik, Inuvialuit Settlement Region; Kuujjuak, Nunavik; Makkovik, Nunatsiavut
Robert Del Tredici	Atomic Photographers' Guild	Iqaluit, Nunavut; Inuvik, Inuvialuit Settlement Region; Kuujjuak, Nunavik; Makkovik, Nunatsiavut

Appendix B: Expectations and Comments by the Participants

Expectations and Comments by the Participants:

After introducing themselves, participants stated their expectations for the session. Most participants said they had come for the following information:

- Long-term effects of storage;
- Effects on Nunavut;
- Impacts on the environment;
- Impacts on wildlife;
- Degree of safety associated with storage;
- Proposed storage location(s);
- Proposed storage method(s);
- Existing plans;
- Storage of Nuclear Fuel Waste in light of current gold mining development;
- Locations where Nuclear Fuel Waste is currently stored;
- Existing research, including who conducted the research.

In order to ascertain the level of understanding within the room at the meeting which took place in Inuvik, Inuvialuit Settlement Region, one participant asked the others that were present if they knew why they were asked to attend. This question received the following responses:

- The government is asking to store nuclear waste in the North.
- The Act sounds as though a site with a large Aboriginal population has been chosen.
- This is reminiscent of past issues surrounding oil and gas.
- Nuclear makes people think of war.
- It does not seem a good idea to fill in the questionnaire.
- Having seen the results of industry, why would Northerners want something like this on their land?
- Is that how southerners regard the North—a place to dump garbage?
- The group should send a message that it does not want the waste in the North.

These responses were indicative of the fact that no information on the subject of the Long-Term Management of Nuclear Fuel Waste had been made available to the region generally speaking prior to the commencement of these dialogues. ITK had circulated educational information, but the region generally speaking had not been informed by either the Government of Canada or the NWMO.

Additional Comments Included the Following:

Nunavut:

1. One participant said that he was present to state that Inuit would not allow storage of Nuclear Fuel Waste on their land. Another participant pointed out that a 1997 NTI resolution strongly opposed storage and transport of nuclear goods in Nunavut. A representative from the Nunavut Planning Commission (NPC) noted that storage of Nuclear Fuel Waste comes under the aegis of NPC, with Article 11 of the 1993 NLCA concerning land use planning. She expressed the NPC's interest in hearing about proposed sites, as well as perspectives of other countries and participants at this session, with a view to progressing toward a community consultation.

Inuvialuit Settlement Region:

2. A participant asked why the Gwich'in are not at the table since they share many Northern lands and have an important perspective. Kneen said these are Inuit-specific dialogues organized by ITK; the Assembly of First Nations will hold dialogues with the Gwich'in. There are currently three dialogues, one for Métis, one for First Nations, and one for Inuit.

3. Members of the group asked if there was a connection between DEW Line sites, nuclear submarines, and the Long-Term Management of Nuclear Fuel Waste.

4. One participant said he had come to the meeting to learn about buried waste in the North. Buried waste in Greenland remained top secret for a long time. "What I want to know is—where was DEW Line waste buried? Was some of it nuclear?" He said he hoped to get such information from this meeting. Events in Greenland give the Inuvialuit and other Northerners a perspective on what could lie beneath. Without first having information, it is not possible to react to this issue.

5. On the issue of nuclear submarines, one participant noted that abandoned submarines are already leading to severe environmental damage in Russia. "Everything will end up in the North at some point," he said.

Nunavik:

1. One participant stated that his goal was to get more information on a potential regional environmental concern and his hope was that Inuit could have input. Other participants anticipated asking constructive questions, while gaining an understanding of the issue and providing recommendations.

Nunatsiavut:

2. A participant from the Labrador Inuit Association (LIA) said he did not know much about the issue and was interested in learning more because of potential uranium development in Labrador.

3. Another said he had renewed interest in the dialogues because he suspected they are actually about uranium mining rather than Nuclear Fuel Waste.

4. A third said his interest came from the point of view of exploration and of a worker at the local fish plant.

5. Another said she was interested because environmental health is one of her responsibilities.

6. Other participants said they were attending to learn as much as they could.

Appendix C: Presentations

Presentations:

ITK:

Soha Kneen, National Coordinator of the National Inuit-Specific Dialogues on the Long-Term Management of Nuclear Fuel Waste in Canada began this segment of the two-day dialogues by stating that ITK does not endorse any of the proposed approaches to Nuclear Fuel Waste management. Rather, these meetings were intended to provide Inuit with information on the issue of the Long-Term Management of Nuclear Fuel Waste, as well as to ensure that Inuit can have a voice in the dialogue process, which is taking place within Canada (both in Canada's South and its North) at this point in time. She further stated that all suggestions made at this dialogue will be included in the resulting report and recommendations.

Kneen then began her presentation by stating that according to the available documentation, the *Nuclear Fuel Waste Act* of November 2002 represented a significant achievement by Canada regarding responsibility for Nuclear Fuel Waste. The Act was founded on consultation with stakeholders, including several policy communications by the Government of Canada in 1996 and 1998, but had no significant consultation with Aboriginal people. In its 1998 response to the Seaborn Panel, the Government of Canada promised to undertake a particular process with Aboriginal people. This Inuit-specific dialogue is part of that commitment.

In discussions with the NWMO and Natural Resources Canada (NRCan) on how to include Inuit in this process, ITK had suggested a comprehensive dialogue. ITK said it was important that Inuit express their opinions in a culturally meaningful way that takes into account the remoteness of communities as well as language needs. In the past, Inuit have opposed the storage or disposal of Nuclear Fuel Waste in the Arctic because of transboundary and other considerations. As part of the current Canada-wide dialogue process, ITK had proposed a three-year Inuit-Specific National Dialogue, which is now nearing its end. This Inuit-Specific Dialogue would culminate in a comprehensive report that includes Inuit opinions on social, economic, environmental, and ethical considerations in the storage of Nuclear Fuel Waste. The report is intended to be submitted to the NWMO by June 30, 2005 and will be included in their recommendations to the Minister of NRCan on November 15, 2005.

Kneen elaborated on the objective of the current national dialogue process as one that focused on the provision of information to Inuit, as well as to enable Inuit in the four Inuit land claims regions to have a voice in the National Dialogue Process that was currently taking place regarding the issue of the Long-Term Management of Nuclear Fuel Waste in Canada. These dialogues, which have been taking place over the past four months, were further intended to assist Inuit to strengthen organizational capacity, acquire knowledge on matters related to Nuclear Fuel Waste, and develop communications with the Government of Canada.

Kneen continued by outlining that the *Nuclear Fuel Waste (NFW) Act* was, according to information provided by the Nuclear Waste Management Organization (NWMO), developed on the foundations of extensive consultations with the public and

stakeholders between 1996 and 1998. In its response to the Seaborn Panel, the Government of Canada indicated that subsequent public dialogues must be appropriate to different value systems. The NWMO has been in discussion with ITK, the Assembly of First Nations, and the Métis National Organization since 1998 to conduct these dialogues.

In its negotiations with both NRCan and the NWMO, ITK had underlined the importance of Inuit involvement in considering options for the Long-Term Management of Nuclear Fuel Waste and in the subsequent recommendations to the federal Minister of Natural Resources. ITK was successful in using a culturally appropriate process in previous Inuit dialogues on this issue. Even if Inuit will continue to oppose the storage and/or disposal of Nuclear Fuel Waste in their territory, Inuit should still be informed on this issue. Kneen noted the additional risks of trans-boundary contamination and possible transportation of Nuclear Fuel Waste through Inuit territories.

Kneen elaborated on the reasons and objectives of the dialogues, including the encouragement of Inuit dialogue on the issue, the production of a series of reports leading to the final report, capacity development at the local level, and Inuit acquisition of knowledge on this issue. The scope of this dialogue focuses strictly on Long-Term Management of Nuclear Fuel Waste in Canada.

Currently, Nuclear Fuel Waste is stored onsite where it is produced, in either wet or dry storage. The majority of Nuclear Fuel Waste is in Southern Ontario, with much smaller amounts at Chalk River and White Shell. Recalling her visit to the Pickering Nuclear Generating Station, Kneen described large dry storage containers and a facility that appeared safe and well-maintained. In response to a question, Kneen said the dry storage containers were steel-reinforced concrete vessels that were filled with Nuclear Fuel Waste and then welded shut.

Kneen noted the complex nature of the Long-Term Management of Nuclear Fuel Waste. Nuclear Fuel Waste can only be held in dry storage after it spends seven to ten years in wet storage, making it unlikely that there could only be one storage site, especially when waste continues to be produced.

Kneen offered more details on the amount of Nuclear Fuel Waste in Canada. Ontario Power Generation produces 90% of Nuclear Fuel Waste in Canada, New Brunswick Power and Hydro-Québec each produce 4%, and other sources produce considerably less. In 2002, there were 1.7 million bundles of accumulated Nuclear Fuel Waste in Canada—enough to fill three hockey rinks in their entirety. At current levels of power production, this amount will double by 2033.

Kneen further stated that while nuclear reactors are not currently located in or close to Inuit communities, it is possible that nearby territories may be chosen for deep geological burial. She further elaborated on this by stating that the Labrador Inuit Association is opposed to storage and disposal of Nuclear Fuel Waste in its territory and adjacent territories.

Summarizing the three methods of Nuclear Fuel Waste disposal and storage under consideration by the NWMO; deep geological disposal in the Canadian Shield, storage at the reactor site, and centralized storage (either above or below ground), Kneen outlined their advantages and limitations:

- **Storage at the reactor site** has the advantages of being situated in a community already accustomed to the presence of a nuclear facility, having the required science and technology at hand, and not requiring transportation. Its limitations are the need for continuing administrative controls and for storing the waste longer than the functioning of the nuclear power plants, the security issues posed by having sites near water, shifting the focus at these sites from the production of power, and that the reactor sites were not selected for storage considerations.

- **Centralized storage** has the advantages of allowing selection of sites solely on the basis of management, involving fewer security concerns, and having the required science and technology on site. Its limitations are that it requires the experience of and funding for effective and continual controls and administration, the potential contentiousness involved in the identification of a site, and the risks and costs associated with transportation.

- **Deep geological storage** has the advantages of possibly being a permanent solution and of not requiring continuing money and management. Its limitations are that it is not possible to prove that it works and that monitoring the site is more difficult.

Nuclear Waste Management Organization (NWMO):

(The content of this presentation script was largely obtained from the Kuujjuak, Nunavik Dialogue – participant questions and comments are included)

The presentations on behalf of the NWMO were given by three individuals:

Name	Title	Community Presented In
JoAnn Facella	Program Manager, NWMO	Iqaluit, Nunavut
Tony Hodge	Senior Advisor, NWMO	Inuvik, Inuvialuit Settlement Region
Michael Krizanc	Communication Manager, NWMO	Kuujjuak, Nunavik Makkovik, Nunatsiavut

The content of each presentation was quite similar. The one difference between the dialogues held in Iqaluit, Nunavut/Inuvik, Inuvialuit Settlement Region and the ones held in Kuujjuak, Nunavik/Makkovik, Nunatsiavut were that the 17 minute video, which was included in the latter dialogues was not shown in both Iqaluit and Inuvik.

The NWMO presentations generally began with a 17-minute video (in the latter two Inuit-Specific Dialogues), the second produced by the NWMO. This video provided an overview of the issue, the proposed approaches, and the methods used by the NWMO in comparing and assessing the options.

Following the video, the NWMO representative gave a PowerPoint presentation, explaining that there are 22 nuclear reactors in Canada, five of which are currently in extended shut-down mode. One of the closed reactors in Pickering, Ontario is coming back into production, and two at the Bruce facility may be returning. It was stated that an environmental assessment is underway at Gentilly, Québec, and a government decision will be made on whether to refurbish the reactor**.** The New Brunswick government will soon decide the future of the Point Lepreau plant. Atomic Energy of Canada Ltd. currently stores used fuel in Manitoba, Ontario, and Québec. Small amounts of used nuclear fuel are also stored at universities across the country.

The used fuel is contained in 1.8 million bundles at seven sites—Pinawa, Chalk River, Bruce, Pickering, Darlington, Gentilly, and Lepreau—as well as the small amounts at universities. The supply amounts to 60,000 tonnes and is half of the eventual total that will be amassed in the lives of the current nuclear reactors. Most of the waste is in Ontario. The first stage—wet storage—lasts seven to 10 years and is followed by a period of dry storage. The dry storage units are designed to last 50 years, although engineers say they could last up to 100 years.

A bundle is about the size of a fire log. It is used in the reactor for 12 to 18 months and during that time, produces power that would supply a household for 100 years.

The NWMO representatives displayed photographs of storage pools and dry storage casks. He described outdoor concrete dry storage silos that are made of reinforced high density concrete, with steel liners and outer shells. Dry-storage silos house four modules, each containing 80 bundles. When full, they are filled with helium and welded shut.

The NFW Act of 2002 required the establishment of the NWMO and its advisory council, whose chair is David Crombie. The NWMO budget—provided by the nuclear industry on the polluter-pay principle—was initially $550 million and has been increased by $110 million each year since, for a total of $770 million by December 2003. The NWMO study must have a financial formula in its recommendations and is required to study three options but may also consider others. The NWMO report is due by November 15, 2005. The federal government must make the final decision based on the approaches studied by the NWMO.

The mission of the NWMO is to develop collaboratively with Canadians a socially acceptable, technically sound, environmentally responsible, and economically feasible management approach for the long-term care of Canada’s used nuclear fuel.

The NWMO’s recommended management approach must include more than a technical method. It must include an overarching management system with components such as governance, financial surety, monitoring and reporting, a public participation mechanism, dispute management, and research and development. It must also include an implementation strategy.

The NWMO representative outlined the NWMO milestones since its inception. In its conversations with approximately 300 Canadians, the NWMO heard that Canadians want an iterative approach with regular reports. As a result, the study has been

divided into four sections. The NWMO produced its first discussion document in November 2003 outlining 10 key questions concerning the following:

- Institutions and governance
- Full public engagement and participation in decision-making
- Aboriginal values
- Ethical considerations
- Synthesis and continuous learning
- Human health, safety, and well-being
- Security
- Environmental integrity
- Economic viability
- Technical adequacy

The second discussion document was released in the summer of 2004. The third will be the draft report, to be released in the spring of 2005. And the last stage will be the release of the final report in November 2005.

The NWMO's second discussion document moves toward a framework for assessment of the options. Through the values derived from the citizen dialogues, an ethics panel, and information assembled from experts, the NWMO identified eight objectives for an acceptable management approach. Each of the storage options was scored against these eight objectives:

- Fairness
- Public health and safety
- Worker health and safety
- Community well-being
- Security
- Environmental integrity
- Economic viability
- Adaptability

The NWMO representative gave a brief overview of the three technological methods of managing Nuclear Fuel Waste, and their advantages and limitations. Storage at the current nuclear sites would eliminate the transportation element, but would require multiple administrations. Also, this option would not be particularly fair to the affected communities, who did not sign on to permanent involvement with nuclear waste. Deep geological storage, where nuclear waste would be encapsulated in rooms 500 to 1000 meters below ground, has been researched extensively—over $700 million has been spent on it.

Noting that the Canadian Shield encompasses Nunavik, a participant asked which area of the Shield is being considered. The NWMO representative responded that the study will not propose sites, just a management approach. The selection of a site can only occur after a method is chosen. Site selection will probably not be final for approximately 30 years after the method is chosen. While the legislation's description

of deep geologic disposal is not limited to the Canadian Shield, the current process is not a site selection exercise.

The participant stated that he hoped the objective of fairness would be applied. The NWMO representative responded that involvement of citizens is very important. The DAD (Decide, Announce, and Defend) process is no longer acceptable.

Asked what would happen if the community near a chosen site were to object, The NWMO representative stated that an increasingly important principle is a willing host community. “It would be reasonable to insist that this be part of the siting principle,” he said.

Asked if the community would be paid for storing the waste, the NWMO representative stated that the issue would need to be discussed. There may be jobs associated with storage of Nuclear Fuel Waste, and at some point, Nuclear Fuel Waste may be considered a valuable resource. Alternatively, Nuclear Fuel Waste may cause damage, which would lever compensation. The NWMO representative referred to a different but illustrative issue, the talk of financial arrangement for Kincardine, Ontario, with the re-establishment of the Bruce nuclear reactor. He noted that some people have another name for this kind of financial arrangement—a bribe. One other aspect for consideration is that there must be agreement between the owner of material and the community if a material is to be moved. However, the current report will not go that far.

Returning to his presentation, The NWMO representative stated that the remaining milestones are the draft report in the spring of 2005 and the final report by November 15, 2005. The final report will be made public at the same time it is delivered to the Minister of Natural Resources. The comments of the NWMO’s advisory council will also be made public at that time. Since the owners of the Nuclear Fuel Waste are paying for the process and comprise the board of directors, an independent advisory council was established to balance and oversee the NWMO’s work. The independent advisory council is providing ongoing comments and will make a final comment on whether the NWMO has done its job. The notes from this council’s meetings are available regularly on the NWMO’s website.

The NWMO representative stated that the NWMO is looking for ITK’s thoughts on what to recommend to the government concerning the process, the three methods, the encompassing management system, the criteria to assess the options, and on who should have what responsibility.

Speaking of balancing benefit and risk, a participant said communities should know what they are getting into. There is still a lot of uncertainty in the science. The most likely method—deep geological disposal—has never been tried before. The NWMO representative stated that even the Egyptian pyramids have lasted for a fraction of the life of used nuclear fuel bundles.

A participant enquired about the health of the nuclear workers in the photographs in the NWMO representative’s presentation. The NWMO representative stated that the

health of nuclear workers is better than that of the average Canadian, but reminded the group that these workers are well paid and have health plans.

Asked if homes are close to the existing nuclear plants, the NWMO representative stated that the Bruce and New Brunswick plants are in remote areas while the Pickering and Darlington plants are in built-up areas, but within an industrial area.

Returning to the previous discussion of the health of nuclear workers, a participant added that although all Canadians are exposed to some level of radiation, exposures are cumulative and there is no minimum safe level. The NWMO representative referred participants to a paper on the NWMO website from a physicist who argues that some radiation is good for humans and serves as an inoculation to further exposure. The NWMO representative further clarified that he does not advocate this position.

Canadian Coalition for Nuclear Responsibility/Atomic Photographers' Guild

(The content of this presentation script was largely obtained from the Kuujjuak, Nunavik Dialogue – participant questions and comments are included)

Gordon Edwards introduced himself as a teacher of mathematics at Vanier College in Montréal. He said he was shocked when he learned the problems associated with Nuclear Fuel waste. He joined the Canadian Coalition for Nuclear Responsibility in an attempt to demystify the subject and make information available to ordinary people in a language they could understand.

Robert Del Tredici introduced himself as a teacher of photography in Montréal. When he became aware that all aspects of the nuclear era are invisible, he embarked on a process to make them visible.

Edwards and Del Tredici's presentation took the form of a slide show of Del Tredici's photographs with commentary by both men.

Dr. Robert Del Tredici told participants that the effects of radiation and other invisible phenomenon are in reality highly visible. "No technology casts a deeper shadow than nuclear technology," he said, noting that it is time for transparency on the issue.

Dr. Gordon Edwards indicated that he and his colleague were present to explain this complicated technology in words that make sense.

Edwards suggested the first question participants should ask is: "Why are they coming to ask for our opinion?" One answer could be that government and industry do not know what to do with Nuclear Fuel Waste. Edwards said he had been very interested in nuclear technology when he first graduated. Given its reputation as a "clean" source of energy, he had been shocked to learn that nuclear energy produced radioactive waste. He asked why it has taken 30 years to start asking questions about

Nuclear Fuel Waste management. “Why are Canadians being consulted now and not back then?” he asked.

Showing slides of enormous cement silos, the presenters described the process of containing spent nuclear fuel bundles. “Once these bundles come out of the reactor, they are lethal and can kill someone in 20 seconds,” said Del Tredici. Edwards underlined the danger of Nuclear Fuel Waste by relating the difficulty of maintenance work on the reactors. “At Pickering, some reactors have been shut down for seven years, both because of thousands of maintenance problems and the limited time workers can spend in the reactor,” he said.

Del Tredici described the uranium atom—the basic fuel for the fuel bundles—and pointed out its heavy nucleus. As this nucleus is bombarded, it splits and releases energy. When this process is repeated on millions of uranium atoms, a huge flux of energy is produced, resulting in either an explosion (a nuclear bomb) or the production of energy.

One of Del Tredici’s pictures showed a Russian monument dedicated to the splitting of the atom and the “father” of atomic energy. “This split results in new entities—literally the fall-out,” he said. Edwards noted that the term “fall-out” is used after a nuclear explosion but not for the process contained in a nuclear reactor even though the material is the same. It is essential that Nuclear Fuel Waste be kept safe and monitored at all times. Atom splitting results in at least 211 fission products, which are different every time. “These fission products are the waste,” he said. Del Tredici added that fall-out is still “coming down” from nuclear testing done by the United States, China, and Britain.
“The fall-out of that testing is considered part of the natural background radiation,” Edwards explained.

The speakers turned to the human toll from radiation exposure. An American marine, who was exposed at close range to an underwater nuclear explosion, suffered from multiple cancers. Only after his death did the lawsuits he had repeatedly launched while alive succeed in modest compensation for his wife.

Edwards explained that exposure to low levels of radiation may take years to manifest. While some body cells will be immediately killed, others will be permanently damaged and perhaps lead to cancers and blood disease. In children, low levels of radiation exposure have been linked to mental retardation. “Some say some radiation is good for you but all scientific evidence points to the probable fact that there is no safe level,” Edwards said. However, the effects of radiation are difficult to prove without extremely expensive studies of an entire population.

Del Tredici said high rates of tumors, stillbirths, and other serious health problems in St. George, Utah were linked to the Nevada nuclear bomb test site, yet the suit against the United States government was overturned and no compensation was paid. Edwards underlined the common element in these cases: the government told the population not to worry. The problem, Edwards restated, is the time delay of up to 20 years. “Workers feel fine on the job but once they retire, health problems appear,” he said.

Canada is the biggest exporter of uranium and prior to the 1960s all of it went to the United States bomb program. “Here is the problem with the transparency of the nuclear industry,” Edwards said. There is no clear history of Canada’s nuclear involvement and the nuclear industry that could provide answers to such questions has failed to do so. “Did they know of the dangers and go ahead anyway?” Edwards asked. The Canadian Coalition for Nuclear Responsibility knows the answer to this question but the NWMO does not address these points.

Switching the focus to uranium mining, Edwards recounted the tragedy of the Dene mine workers at Port Radium who carried burlap sacks of crushed uranium ore on their backs, unknowingly breathing in radioactive particles. Deline, on the shores of Great Bear Lake (Sahtu), otherwise known as the “Village of Widows,” lost many of its men to cancers as a result. The mine workers were not told two key things: handling the crushed ore would be dangerous to their health and the uranium would be used to create bombs. The relationship between the nuclear industry and the military has led to the mystery and secrecy that still abound even though the dangers of radiation have been known since as early as 1931. The dangers to human health were relayed to government workers who assayed the uranium ore but not to the Dene miners.

Although alpha radiation is a very weak form of radiation easily stopped by a sheet of paper, its inhalation can seriously damage lung tissue cells. Referencing a picture of a radiograph, Edwards noted the pulses of radiation that are given off in affected lung tissue. Even though only a small number of cells are damaged, it is sufficient for the onset of cancer. In the U.S., the Surgeon General has identified home radiation (from radon) as the second most important cause of lung cancer. Edwards noted that the nuclear industry sometimes uses the argument of background radiation for justification to double exposure. “While it’s true that it’s natural, it doesn’t mean you should add to the risk,” he said.

Uranium mine tailings present another serious environmental and health concern. Although the original ore is gone, the same amount of radiation remains and is generally uncontained. This has been acknowledged by industry and a government committee that studied the issue, recommending that uranium mining be halted until a solution is found for high level wastes. Edwards noted that while radioactive tailings have not nearly been given the same attention as high level waste, it remains a serious concern for its ease of entering the food chain. “Why is the NWMO not dealing with all types of waste?” he asked.

In a subsequent overview of Canada’s inventory of radioactive waste, Del Tredici and Edwards wondered why discussions of Nuclear Fuel Waste management have not included the notion of stopping its production.

Edwards then turned to the options for Nuclear Fuel Waste management under discussion. He noted the difficulty of safeguarding dry storage containers in the context of radioactive half lives of thousands of years. “We have never safely disposed of anything,” he said. Even if an underground Nuclear Fuel Waste repository was built, complete with signs warning of the health and environmental

dangers, there is no guarantee that the language would still be understood in a thousand or ten thousand years. The fundamental question remains: Why are we producing this stuff? “It’s a very complicated and dangerous way to boil water for the steam, which turns the turbines that produce electricity,” said Del Tredici.

Reactors are intended to operate for approximately 30 years. The high maintenance and renovation price tag begs the question: Are they worth refurbishing? Renovations are costly because of the radiation danger and unexpected problem, with renovations to Pickering Unit Four costing $1.4 billion. Despite the costs, the great attraction to nuclear production persists. Where else can one find such a tremendous concentration of energy in such a small pellet? Nuclear energy sounds like a good idea, so clean and well-safeguarded, but problem arise from its usage. “You have accepted an eternal commitment to look after the waste,” Edwards said. The nuclear industry has failed in its responsibility to inform the public by perceiving major technical problems as a public relations problem.

The contamination of the food chain in Lappland from the fall-out of the Chernobyl plant disaster has shown that long-range transport is a serious concern. This release is more important than the original explosion. In reply to a question about the monitoring of the Chernobyl reactor site, Edwards indicated that a sarcophagus protects the melted core. International financial aid is being sought to maintain this protective structure.

Displaying a picture of wet storage, Edwards indicated that 14 feet of water is needed to cool the radioactive bundles. “The heat generated by the spent fuel bundles needs to escape; if the waste was sealed it would be very dangerous,” he explained. Dry storage containers are necessarily large because the walls have to be thick enough to contain the radioactivity. Del Tredici noted that similar dry storage containers would be used for centralized storage. “Would this really be a simplification?” he asked.

The third option, underground storage, has problems as well. Del Tredici referred to a test shaft in Manitoba that runs one-quarter of a mile into ancient granite. No one can predict what would happen if Nuclear Fuel Waste was stored in rock containing millions of hairline fractures created by drilling the shaft. The concern is with the fracture zones. Furthermore, there is no doubt that such shafts would fill with water, which would then seep into fracture zones. “How can you restore the original integrity of the rock?” Edwards asked. There is no guarantee that this management option would work, and failure would be disastrous.

Reprocessing uranium brings its own dangers. Del Tredici noted that the amount of waste produced from reprocessing multiplies with the use of corrosive acids. The extracted plutonium is useful for only one thing: nuclear weapons production. Edwards suggested that plutonium is the reason countries want nuclear reactors. Canada’s gift of a nuclear reactor to India was never used to generate electricity but was used to produce India’s first nuclear bomb.

Edwards noted that the Government of Canada has never passed a law forbidding uranium reprocessing. “They have always kept that door open,” he said. The suggestion that Nuclear Fuel Waste is a valuable resource can only refer to its

capacity to be reprocessed into plutonium. The very fact that plutonium gives off alpha radiation while still being relatively safe to handle creates a significant safety issue.

Del Tredici showed a picture of the Hanford nuclear reprocessing storage site in the United States. Millions of gallons of contaminated acid have leaked into the ground causing serious environmental problems. It is immensely difficult to manage this reprocessing waste and the plutonium produced.

A community that accepted Nuclear Fuel Waste in an underground repository or centralized storage would be faced with the possibility of future reprocessing for plutonium and further environmental and security problems. “Shouldn’t this be more overtly on the table?” asked Edwards.

Reprocessing of uranium has left its mark in Russia, said Del Tredici. For many years, radioactive liquid waste was dumped directly into a river upstream from Tartar villages. “They have been living with it unknowingly and now that they know about the contamination there is little they can do about it,” he said.
Edwards noted that the uncertainty of underground storage is the very problem. “The evidence will come when it’s too late,” he said.

The question of whether or not it is responsible to store Nuclear Fuel Waste in an irretrievable process remains controversial. “It is arrogant to think that we have a solution and can determine Nuclear Fuel Waste management for future generations,” Edwards said. There is no perfect solution and, furthermore, there is no known solution. “We are being asked to choose one of three management options. Are these the only options?” asked Edwards.

Del Tredici showed a photo of the Hiroshima peace bell to suggest that Canadians should not simply be accepting this situation. There is at least one more option: stopping the production of Nuclear Fuel Waste in the first place. Only then can Canadians talk about securely storing the waste.

Edwards contrasted this dialogue process with Sweden’s national debate on the issue. The Swedish government provided money to different citizen’s groups to educate themselves on the Nuclear Fuel Waste issue. A subsequent referendum determined that nuclear power should be phased out. Similarly, Germany and Belgium are phasing out their nuclear reactors. The question of nuclear reactor phase-out in Canada clearly is not on the table and is not part of the NWMO’s mandate. Edwards suggested the Government of Canada and the nuclear industry are determined to continue with nuclear power production.

Edwards questioned the validity of the three options being presented to Canadians. Onsite storage is not a long-term solution if Nuclear Fuel Waste is going to be produced indefinitely. Furthermore, all nuclear reactor sites are located near bodies of water, with the potential for serious environmental problems. Despite sounding like it implies one storage site for the country, centralized storage would actually involve at least eight sites—one centralized location plus the seven current and any new reactor

sites. Another important question is if Canada's trade in nuclear reactors opens up the possibility of importing nuclear fuel waste.

Edwards suggested that any option Canadians choose will be interpreted as an endorsement to continue with nuclear production. "I believe that, eventually, they want to put Nuclear Fuel Waste underground and that the other options are just phases in that direction," said Edwards. The one positive thing about this dialoguing process is that for the first time people are hearing about Nuclear Fuel Waste and are being asked for their opinion. The NWMO has done a much better job of presenting the information than has the nuclear industry in the past.

In closing, Edwards clarified an earlier comment on the Seaborn Panel. Contrary to the claim that the Seaborn Panel said Nuclear Fuel Waste management options are safe but not publicly acceptable, the Panel said broad public support is required and safety is only one part of acceptability. Technical acceptability goes in hand with societal acceptability.

Appendix D: NTI Resolution

NUNA VUT TUNNGA VIK INCORPORATED

BOARD OF DIRECTORS

Arviat, N. W. T. August 26 to 28, 1997

Resolution No.: B97/08-24

Re: Storage of Nuclear Material In Greenland

Moved by: *James Eetoolook*
Seconded by: *Larry Audlaluk*

WHEREAS there are reports that the Premier of Greenland is giving serious consideration to a plan to store weapons grade nuclear waste and other nuclear material from Russia and the United States in Greenland;

AND WHEREAS Rand Unrestricted Draft Series data posted on the Internet as "A Concept for Strategic Material Accelerated Removal Talks {SMART} "Debat om Thule Air Base; "Atom-fængsel" i Grønland" gives considerable detail on this nuclear proposal;

AND WHEREAS Rand estimates the material involved could be enough to manufacture about 100,000 nuclear warheads;

AND WHEREAS in addition to Greenland, other circumpolar locations including Canada, Iceland, and Northern Scandinavia could be under consideration;

AND WHEREAS the U.S. airbase at Thule, Greenland is cited as the most favorable location by the designers of the project proposal;

AND WHEREAS the transport of hazardous materials to or from the proposed Thule site could threaten people, lands or waters protected under the Nunavut Land Claims Agreement;

AND WHEREAS concern has been expressed to NTI by residents of Grise Fiord, N.W.T., a community which is relatively close to Thule;

AND WHEREAS: NTI is opposed to the storage of nuclear and other hazardous materials in the arctic;

NUNA VUT TUNNGA VIK INCORPORATED

BOARD OF DIRECTORS

Arviat, N.W.T. August 26 to 28, 1997

AND WHEREAS NTI has already conveyed its strong concerns about this matter directly to the President of the Inuit Circumpolar Conference and requested that he convey the matter to the Premier of Greenland;

THEREFORE BE IT RESOVED that NTI voice its opposition to any plans for the storage of nuclear goods, or the transportation of such goods in the Arctic.

AND BE IT FURTHER RESOLVED that NTI take steps to notify representatives of governments and organizations involved in any such planning of our strong opposition to such plans.

In favour: 9
Against: 0
Abstentions: 0

CARRIED Date of Vote: August 28, 1997

Appendix E: ICC Resolution (June 1977)

ICC Resolution (June 1977):

RESOLUTION 77-11 (Concerning peaceful and safe uses of the Arctic Circumpolar Zone)

RECOGNIZING that it is in the interest of all circumpolar people that the Arctic shall continue forever to be used exclusively for peaceful and environmentally safe purposes and shall not become the scene or object of human conflict or discord; and

ACKNOWLEDGING the emphatic contributions to scientific knowledge resulting from a cooperative spirit in scientific investigations of the Arctic:

NOW, THEREFORE, BE IT RESOLVED:

(a) that the Arctic shall be used for peaceful and environmentally safe purposes only, and that there shall be prohibited any measure of a military nature such as the establishment of military bases and fortifications, the carrying out of military maneuvers, and the testing of any type of weapon, and/or the disposition of any type of chemical, biological or nuclear waste, and/or other waste. Further, present wastes be removed from the Arctic;

(b) that a moratorium be called on emplacement of nuclear weapons; and

(c) that all steps be taken to promote the objectives in the above mentioned.

Appendix F: Acronyms

AECL	Atomic Energy of Canada Ltd.
HTC	Hunters and Trappers Committee
ICC	Inuit Circumpolar Conference
IRC	Inuvialuit Regional Corporation
ISR	Inuvialuit Settlement Region
ITK	Inuit Tapiriit Kanatami
LIA	Labrador Inuit Association
NIRB	Nunavut Impact Review Board
NFW Act	Nuclear Fuel Waste Act
NIYC	National Inuit Youth Council
NLCA	Nunavut Land Claims Agreement
NPC	Nunavut Planning Commission
NRCan	Natural Resources Canada
NTI	Nunavut Tunngavik Inc.
NWMO	Nuclear Fuel Waste Management Organization