

NWMO Citizen Panels Report, Phase II: Panel Four

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Navigator Ltd.

nwmo

NUCLEAR WASTE
MANAGEMENT
ORGANIZATION

SOCIÉTÉ DE GESTION
DES DÉCHETS
NUCLÉAIRES



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Nuclear Waste Management Organization

The Nuclear Waste Management Organization (NWMO) was established in 2002 by Ontario Power Generation Inc., Hydro- Québec and New Brunswick Power Corporation in accordance with the *Nuclear Fuel Waste Act (NFWA)* to assume responsibility for the long-term management of Canada's used nuclear fuel.

NWMO's first mandate was to study options for the long-term management of used nuclear fuel. On June 14, 2007, the Government of Canada selected the NWMO's recommendation for Adaptive Phased Management (APM). The NWMO now has the mandate to implement the Government's decision.

Technically, Adaptive Phased Management (APM) has as its end-point the isolation and containment of used nuclear fuel in a deep repository constructed in a suitable rock formation. Collaboration, continuous learning and adaptability will underpin our implementation of the plan which will unfold over many decades, subject to extensive oversight and regulatory approvals.

NWMO Social Research

The objective of the social research program is to assist the NWMO, and interested citizens and organizations, in exploring and understanding the social issues and concerns associated with the implementation of Adaptive Phased Management. The program is also intended to support the adoption of appropriate processes and techniques to engage potentially affected citizens in decision-making.

The social research program is intended to be a support to NWMO's ongoing dialogue and collaboration activities, including work to engage potentially affected citizens in near term visioning of the implementation process going forward, long term visioning and the development of decision-making processes to be used into the future. The program includes work to learn from the experience of others through examination of case studies and conversation with those involved in similar processes both in Canada and abroad. NWMO's social research is expected to engage a wide variety of specialists and explore a variety of perspectives on key issues of concern. The nature and conduct of this work is expected to change over time, as best practices evolve and as interested citizens and organizations identify the issues of most interest and concern throughout the implementation of Adaptive Phased Management.

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.



NAVIGATOR

NWMO Citizen Panel Report Saskatoon, Saskatchewan

NUCLEAR WASTE MANAGEMENT ORGANIZATION
SASKATOON, SASKATCHEWAN CITIZEN PANEL REPORT
MARCH 2008

WHAT ARE CITIZEN PANELS?

Building on previous qualitative research studies, the NWMO contracted Navigator to initiate Citizen Panels in 8 cities across Canada. The goal of the Citizen Panel project was to further explore the feelings, attitudes and perceptions of Canadians toward the long-term storage of Canada's used nuclear fuel.

The Citizen Panel project is markedly different than the qualitative research projects that have preceded it. The intent of the Citizen Panel format used in this project is to allow for the discussion to be formed and driven by the views of the individual Panelists. These Panelists have completed Phase One of the Citizen Panel project where they were introduced to the NWMO and are aware of rudimentary facts surrounding Canada's used nuclear fuel such that an informed discussion can occur.

Phase Two of the Citizen Panel project occurred in Saskatoon, Saskatchewan in January 2008.

WHAT IS NAVIGATOR?

Navigator is a research-based public affairs firm that works with companies, organizations and governments involved in the public policy field.

Navigator has grown to become a diverse firm with consultants from a variety of backgrounds who have excelled in the fields of journalism, public opinion research, politics, marketing and law.

Our strategic approach can be summed up as: *"Research. Strategy. Results."*

PANEL REPORT OUTLINE

1. NWMO Citizen Panel Background

- a. Citizen Panel
- b. Panelist profiles
- c. Panel methodology

2. Panel Notes

- a. Disclaimer
- b. Panel Notes

3. Parking Lot Questions

- a. Phase Two Parking Lot questions

Appendices

- i. Navigator Personnel
- ii. Discussion Leader's Guide
- iii. Discussion document: Executive Summary

1. NWMO CITIZEN PANEL BACKGROUND

a. Citizen Panel

The Saskatoon, Saskatchewan Phase Two Citizen Panel was held on January 17, 2008 at the Saskatoon Inn, a neutral third party facility in Saskatoon.

The Panel was held over three hours from 6PM – 9PM with 13 Panelists in attendance. Jaime Watt, a Navigator research professional, acted as Discussion Leader.

A general outline of discussion objectives, as well as a discussion document intended to guide the work of the Panel were prepared in advance of the Citizen Panel. Reproductions of the document shown to the Panel can be found at the end of this report as appendices.








b. Panelist Profile







In order to ensure that Panelists speak openly and freely over the course of this research, the individual identities of Panelists will remain protected and not revealed to the NWMO at any point of the project. Contact with Panelists is managed exclusively by a dedicated Panel Manager and each Panelist has been given an identifier code to ensure anonymity in all accessible Panel documents. All personal information and contact reports are stored separately and controlled by the Panel Manager.

While verbatim comments are used through this report, the identification will be only by Panel or by unique Panelist identifier code, but never by name.

Panelists have agreed to offer additional information, including their gender and one additional fact about their lives to make the Panel reporting richer for the reader.

Below are the profiles of the Saskatoon Panelists by Panelist identifier code:

	City: Saskatoon Age: 65+ Gender: Male Occupation: Retired
Panelist: SA-2A	
	City: Saskatoon Age: 35-44 Gender: Male Occupation: Employed, engineer
Panelist: SA-4A	
	City: Saskatoon Age: 35-44 Gender: Male Occupation: Employed, information technician
Panelist: SA-6A	
	City: Saskatoon Age: 65+ Gender: Male Occupation: Self-employed, forensic auditor
Panelist: SA-8A	
	City: Saskatoon Age: 25-34 Gender: Female Occupation: Self-employed, dance facilitator
Panelist: SA-10A	
	City: Saskatoon Age: 25-34 Gender: Female Occupation: Employed, teacher
Panelist: SA-12A	
	City: Saskatoon Age: N/A Gender: Female Occupation: N/A
Panelist: SA-16A	

	City: Saskatoon Age: 65+ Gender: Female Occupation: Retired architect
Panelist: SA-3A	
	City: Saskatoon Age: 55-64 Gender: Male Occupation: Employed, electrician
Panelist: SA-5A	
	City: Saskatoon Age: 45-54 Gender: Female Occupation: Employed, research scientist
Panelist: SA-7A	
	City: Saskatoon Age: 25-34 Gender: Female Occupation: Employed, territory manager
Panelist: SA-9A	
	City: Saskatoon Age: 45-54 Gender: Male Occupation: Self-employed, mechanic
Panelist: SA-11A	
	City: Saskatoon Age: 18-24 Gender: Female Occupation: Employed, massage therapy
Panelist: SA-14A	

c. Panel Methodology

These Citizen Panels have been designed, as much as possible, as collaborative discussions facilitated by a Discussion Leader. They are separate and apart from focus groups in that they empower individual Panelists to raise questions and introduce new topics. The role of the Discussion Leader, in this format, is merely to introduce new topics of discussion and lead the Panel through a number of discussion exercises.

As well, additional measures were incorporated into this Citizen Panel format to empower individual Panelists. Each Panelist was made aware of their independence and responsibilities to both contribute to, and lead, the Panel discussion. A transcriber, traditionally taking contemporaneous notes behind one-way glass or in another room, was, in this case, placed inside the discussion room. Panelists were empowered to direct him or her to take special note of elements of the Panel discussion they felt were important, or ask him or her to recap any part of the discussion upon request. A commitment was made by the Discussion Leader that the notes taken would be sent to Panelists for review, possible revision and approval, to help Panelists have faith they are in control of the proceedings and ensure their contribution is reflected accurately.

Potential Panelists were originally selected through random digit dialling among a general population sample in the wide area in which each Panel was held. Individuals called underwent a standard research screening survey in which they indicated that they were interested and able to participate in a discussion about a general public policy issue with no advance notice of the specific topic. Individuals were screened to include community-engaged opinion leaders in at least one of these topics: community, environment, and/or public/social issues. Those that passed the screening process were asked to participate in a traditional focus group on the perceived trust and credibility of the NWMO, which allowed an introduction to the topic of used nuclear fuel and topics such as Adaptive Phased Management. The discussions were neutral in tone and did not presuppose any outcome on issues such as nuclear power generation and siting for used nuclear fuel.

At the end of this research study, participants were asked if they would be willing to continue in discussions on the topic of used nuclear fuel. Those that expressed interest were placed on a “short list” of potential Panelists for the four-phased Citizen Panel project. Research professionals at Navigator subsequently used this pool to select Panelists that would ensure a diversity of age, gender and experience in the Panels. Only participants who demonstrated both a willingness and ability to contribute to group discussion and complete exercises were included in the pool. The content of each participant’s contribution in the focus groups was not reviewed by Navigator professionals. Rather, the only qualifiers were that individuals could speak clearly and were able to grasp concepts introduced to them at a basic level.

A target Panel population of 18 was determined for each location in the interest of ensuring the long-term viability of each Panel over the course of four discussions.

Phase One Citizen Panels occurred in late Fall 2007. Although successful in terms of the richness of data collected in all 8 Panel locations, it was clear upon completion of the Panels that it would be necessary to hold Supplementary Citizen Panels in four locations (Toronto, Montreal, Regina and Sault Ste. Marie) due to smaller than expected Panel populations, as well as a difficulty experienced by some Panelists to honour their commitment to attend, as was confirmed on the day of the Panel.

Supplementary Citizen Panels occurred in early January 2008 and consisted of 6 new recruits, selected by random digit dialling, to replicate the experience by which all other Panelists had been selected. New recruits were sent a reading package in advance and then had a one hour “lobby” session immediately prior to the Supplementary Citizen Panel. This session replicated a condensed version of the Preparatory Phase research and allowed for any questions Panelists might have had about the NWMO. Following the “lobby” session, the Supplementary Citizen Panel continued, adding Panelists who had confirmed but, for a myriad of reasons, could not participate in the Phase One Citizen Panels.

Following the completion of the Supplementary Citizen Panels, those that demonstrated a willingness and ability to continue were added to the pool for Phase Two Citizen Panels.

Phase Two Panels occurred in mid to late January 2008. The Panel discussion began with the Discussion Leader asking Panelists if they had thought any more about the NWMO since the last Panel, or if they had just gone back to their daily routines and not given the organization much additional thought. The Discussion Leader then distributed a document for discussion, the Executive Summary of the NWMO’s study *Choosing a Way Forward: The Future Management of Canada’s Used Nuclear Fuel*. The document was given both individual consideration, as well as collective consideration. Individually, Panelists were asked to mark the documents with red and green pens, green indicating they felt a certain point was helpful to their understanding, and red indicating that they did not find the point helpful. The intent of the individual document review was to serve as a launching point for further collective consideration and discussion of the more complex strategic objectives of the NWMO. The Panel discussion concluded with Panelists reviewing the answers provided by the NWMO to the questions Panelists had posted in the Parking Lot in Phase One.

Again, Panels were successful in the richness of the data gathered. Furthermore, Panelists have begun to demonstrate a higher degree of ownership in the process with impressive attendance, commitment to the discussion and, in some cases, engaging in extra work, such as assembling their thoughts on paper and seeking out additional information.

This Panel Report is, to the best of Navigator’s abilities, a faithful rendering of the discussion held in Saskatoon and stands alone as a record of the Citizen Panel discussion on January 17, 2008. A larger Aggregate Report on this wave of Panel discussions, including the Panels in Montreal, Kingston, Sault Ste. Marie, Scarborough, Saint John, Toronto, and Regina has also been submitted to the NWMO.

2. PANEL NOTES

a. Disclaimer

The attached are contemporaneous notes taken by a transcriber positioned in the room with the Panelists. The transcriber was taking direction from the Citizen Panel on specific points of interest. The following is not an official transcript, but a best effort to capture the sense of discussion with some granularity.

Panel notes will be reviewed by all Panelists, with each having an opportunity to revise (add or subtract) their individual contributions such that it the notes then stand as a clearer rendering of the Panel discussion.

The transcriber for this panel was Courtney Glen, a Navigator research professional.

b. Panel Notes

Report of the Saskatoon NWMO Citizen Panel
Second Meeting
17 January 2008

General Discussion

[Discussion Leader]: I'm wondering if after the last group. Did you think any more about the NWMO or did you just go back to everyday life?

- SA-14A My receptionist asked me about it, she has about 6 years of college and just wanted some information because she didn't know anything about it.
- SA-2A I'm not a computer user but I had a friend of mine check out the website and he got back to me wanting to know a bunch of stuff about it and I told him what it was about and that I found it pretty interesting.
- SA-3A I thought the website was interesting because you can see a timeline. I haven't talked to any of my friends about it.
- SA-8A I was talking to myself and not wishing to raise an obvious issue here tonight but I was trying to sort out when this stuff in Ottawa was raised about nuclear reactor safety as opposed to disposal. The notes today that Panel Manager sent out, I found that interesting.

[Discussion Leader]: Are there implications from what happened in Ottawa to the NWMO?

SA-2A Her position was that AECL was a not political organization. What connected it to us because at the end, you ask who is going to be responsible? When you see things like Chalk River, who is going to make the decision? Should be engineers and AECL and the minister looks to the expertise.

[Discussion Leader]: How do you set standards? Who sets the standards?

SA-8A It's confusing because she was fired as Director but retains her seat on the board. If she is allegedly incompetent, why is she still on the board?

SA-11A Again leads to the question, if the CNSC, they have a long list of rules and if this individual were to follow the rules to the letter and that therefore caused the reactor to shut down, she can say "I'm sorry, I followed the rules" but then someone says she made a bad decision notwithstanding the rules.

[Discussion Leader]: At its core it's an engineering dispute.

SA-8A I'm wondering as a result of this, if the government will think they need a backup facility to make medical isotopes.

SA-7A There's so much pressure that you can't put safety first, they compromise the standards.

SA-11A Plans have been in place to build another one but it keeps on hitting political roadblocks.

[Discussion Leader]: You remember the last time we looked at the brochure. The NWMO have taken your thoughts very seriously. The next version of that booklet will look very different. I don't know when it gets reprinted but it will look different. I also had the opportunity to present findings to the senior officials of the NWMO. We had full attendance and I was very impressed with how seriously they took our findings and how many questions they had. This is something the organization takes quite seriously.

SA-7A I appreciate that because I saw on the website that the pamphlet was already out and I thought our work was redundant.

Choosing a Way Forward Executive Summary Exercise

[Discussion Leader]: After the last time, I felt like it still seemed important for folks to get more information on APM. I'm going to show you this document. I'd like you to read it and tell me things that you find important and help you understand APM by circling

them in green. Things you find not particularly important, I'd like you to circle those things in red.

[Discussion Leader]: How did you find it? Was it helpful? Clear? Informative?

- SA-16A Easier to comprehend. I think I'm preconditioned as I have been doing some reading on the website. It seems easier to go through. Of course, you know, I'd like the print bigger, but this is okay.
- SA-3A I think we can pretty well understand the process. I don't think this is pretty well written. They called pages 4 and 5 a chart, I don't think it's a chart. Page 4 – develop and certify transportation containers – just simply the language, be short and to the point.
- SA-2A When you're addressing social, cultural and economic effects, it is repetitive but on the other hand, if you don't put that in, someone who's editing is going to wonder why you haven't mentioned this group, why haven't you done that, etc. I think it's a good 78.5%.
- SA-11A Writing is always for an audience. I see what you mean about it being too wordy. For someone who picks up the Star Phoenix, this wordiness would be a bad thing but this was written for an audience – for government or even us who have even had more experience so I don't think its too wordy for people who have the background.
- SA-7A Page 4, the first 30 years when they give options, it would be nice to have a flow chart. It seemed like it was backtracking and circular. I found it was great. The shallow versus the deep storage, I didn't realize it was so much about a choice and a progression.
- SA-8A The difference between shallow and deep storage, I understand but I still don't know why there's an option. It was very well written, well balanced for its few different audiences and funny enough compared with the brochure, I found it easier and quicker to read. They use the word ethical in there twice – ethical responsibility – it doesn't seem quite strong enough when you think about what the fall out could be. I'd have to look for a strong adjective there.

[Discussion Leader]: People have difficulty around this interim shallow storage step. Let me give you more information. If we decided we wanted to put it in a deep geological

repository tomorrow, it would take 60 years because to go through all the approval steps, safety steps and testing, if we fire the starting gone today, it would take 60 years. That is why the shallow option is on the table for consideration.

- SA-9A I get the impression that there is a delay on purpose. The delay gives everyone time to change their mind about everything. My impression was that the delay was part of the adaptive phase. You're not going to just go do it.
- SA-4A Reading through, I thought it was really heavy. I thought some of the things were good. Goals on page 3 I thought was really good. On pages 4 and 5, it would have been good to have some sort of flow chart and on page 3, when they talk about different options, a chart would be nice.
- SA-14A I would give it a B plus. There are some specific facts I felt I needed to know, like how much exact dollars, exactly how many metric tonnes, it all soaked in much easier today.
- SA-6A Much easier to read, it's not all over the place. Towards the end my brain started to wander a bit.
- SA-10A I found pages 4 and 5 confusing in the way it was organized. Overall it was easier to understand because of my exposure, it's not getting any more interesting. Important, but not interesting.
- SA-12A I thought it was a great read. I like the statistics, to me that makes it more interesting. On page 3, they could shed a little bit more light on the NWMO's role in terms of it not being for or against nuclear power. When I'm a citizen and I'm reading something, I think that someone that wants nuclear power. Other than that, just a few minor things but I thought that on page 2, there were some really well written things, it almost sounded fairytale like some of the language used. Although the radio activity...time...potential health risk for a very long time. How long? Isn't that a bit too nicely written? I wasn't really one way or another in terms of liking it, it just wasn't that well written to make me want to continue reading. Page 4 I was confused. I was reading the plan and the options and then it said that the examination led us to develop another approach. I had to go back and see how they were different and it was the shallow storage, which isn't that different. Pages 4 and 5 was too much information for me.

involve the children. One spark of starting something. Kids want to know answers.

- SA-12A Then you're looking at a provincial document implementing that sort of thing in grade 8 science.
- SA-11A Might be good to look at something about this process being in the school curriculum. But there is another hidden curriculum. A lot of kids think nuclear is just bombs and bad and we can't do that anymore. They are told that by their teacher. That was the general absorption that she had.
- SA-12A Adults think the same thing.
- SA-8A What do people say when the kid is confronted by a policeman? You be careful, he'll put you away and that's not true.
- SA-12A SA-5A, do you think it should be in the curriculum?
- SA-2A Surely about waste and management in Canada, you should have a curriculum that does cover all the various players, various stakeholders.
- SA-7A For kids, nuclear waste is pretty theoretical.
- SA-9A My 7 year old can't get a good grasp on the things we're dealing with here. I think it would be very difficult to instil this in the classroom when you think about the basics they might have picked up. Kids don't pick up everything – they sometimes pick up certain parts of things, but kids cannot grasp this like we would. That would not be the way.
- SA-11A There's still a general good and bad that is picked up in tone.
- SA-12A How would a teacher best deliver that information. It starts with a plan.
- SA-6A Kids are the generation that are going to be dealing with this.
- SA-14A It has to start in the schools. It's embarrassing what people from Saskatoon know.
- SA-2A Look how involved kids are in recycling.

[Discussion Leader]: Another key attribute is that the approach to dealing with this issue be adaptive, able to change and incorporate new developments. I'm wondering how the NWMO would demonstrate in its planning that it is adaptive and continues to be open to changes? How would you know that its implementation plan is staying open and being adaptive?

SA-4A Set up periodical review processes with various stakeholders. You would have a meeting forum where they would present their work and research and show results. Just like annual financial reporting.

[Discussion Leader]: You sound like you're saying annual reporting but showing where you have been.

SA-11A Call it a change document that needs to be produced every year or so. If it has material in it, it doesn't mean they've planned badly, it just means they've allowed for change.

SA-12A Adaptive for me is an opportunity for hope, more technology and science advances.

SA-8A Taking it out and making sure it doesn't go in the political arena. Could there not be some form of committee review put together with interested citizens, some of them technically astute, academics, and so on. This organization would have to be accountable to show that it's adaptive. Would meet around the country every few years so this would be public and the public would have the chance to ask questions through a certain process.

SA-7A Every few years you have an international conference discussing where progress has been made.

SA-5A Some of these consumer groups send out questionnaires. I fill them out and sometimes get free stuff. I fill them out because they have to get their information from somewhere.

SA-11A If you're looking at the long term – which really struck me about this document, it's not just a political cycle – something in the future to consider might be having a lottery or people would apply but as the site is being constructed, regular tours of everyone who is interested would happen and be free of charge.

[Discussion Leader]: Do you imagine there might be security issues?

SA-11A Why would there be a security issue? No one is going to put Osama Bin Laden on the plane. Used nuclear fuel is not something you could blow up.

[Discussion Leader]: The NWMO is committed to informing the process by research technical research and social research. What are your thoughts on what the social research program should look like? How you would want to know about it? Hear about its findings? How do you ensure that it is as robust as the technical research? Does it need to be?

SA-11A They're not entirely separate. They need to have technical understanding before they talk to people. I don't see the social study or the examination of how to approach people or how to find out what they think unless they have some basis of making the opinion. We're back to square one – we've learned a lot. You can't ask everyone what they think about this issue because most of them don't have enough knowledge.

[Discussion Leader]: What does the social research program look like?

SA-11A You would have to start off with the bare minimum of an education process.

[Discussion Leader]: Would you be interested in hearing results from other streams of social research? Can you think of other things? Is there a role, for example, to consult internationally on the social research side as well as the technical side? Is that meaningful to us?

SA-7A They have more experience so I'd like to know what other people internationally are doing. There's a think called philosophy in the community – could have something like that. Something educational for the community.

[Discussion Leader]: People say they won't do that until they know their community is being targeted.

SA-9A The cost of advertising and education for the whole community would be insane. Is it worth putting those resources into that? That's not the goal. To expect everyone to understand, have reasonable explanations is unreasonable.

SA-5A Wouldn't happen.

SA-11A They wouldn't know but would say they were against it.

SA-8A If you have a street and ask them to come to a meeting discussing halfway houses, no one will come. If you say one of the neighbourhood houses will be a halfway house, they will all come. To conceptually talk about nuclear waste management, no one will be interested. What happens if you talk about a disaster occurring if the waste is not properly secured, people will be interesting. Not scare tactics though.

[Discussion Leader]: Are you suggesting that maybe the fact that we've lived with nuclear waste for 40 plus years safely without incident, it's just sort of there and the potential risk is not in people's minds.

SA-8A Yes, I'm saying that.

SA-11A Maybe we look at it in a simple way. Maybe they should have a message, when they mention something about where the stuff was mined in the first place, maybe the message should be that we've dug it out of the ground, we have a responsibility to put it back. Then maybe will understand that not in my backyard is not a reasonable answer.

[Discussion Leader]: Their explanation is that we've benefited from its use, we have a responsibility to take care of it at the other end.

SA-7A I like that sound bite.

SA-5A We've lived with it because we know there's nuclear but 99% don't know what we're living with.

SA-11A It's almost a taboo subject.

SA-12A I almost feel like it's been kept hush hush, like we shouldn't be speaking about it.

[Discussion Leader]: For this discussion tonight, we're going to assume good faith. If you accept that the people running the organization are acting in good faith, if there is an accident with this stuff, they're just as much at risk as we are. If those people are actually going to work everyday and do their best, and they know that at the end of the day, the rest of us Canadians will never be expert enough to make judgments in this field, but we're going to have to trust them. We need to have some way to gain trust and credibility over time. What are the kinds of things you want to see them doing, what are the kinds of ways you want to see them acting? What behaviours do you want to see them exemplify?

SA-8A Wouldn't it be nice to know who they are somehow? Sure we've read, but wouldn't it be nice to know them? Not necessarily their academic background...

- SA-10A I was thinking of information sharing, like open houses at libraries.
- SA-16A I think it's important for us to know their background and their experience. I think that places like the Internet.
- SA-10A I'd rather see a live person.
- SA-7A What about every few years to send someone or David Suzuki in to do a documentary about what's going on.
- SA-12A If I'm going to trust them, I want to know what they're going to do when something goes wrong.
- SA-2A There are a few people, with the question you raise about getting the social research part, there aren't many people that are really competent in that area. It's a very difficult area. One place in particular is in business. York University in their school of business now has ethical and moral specialists speak. That is the kind of person you would want involved.
- SA-11A You're looking at a matter of social responsibility. Who are we going to allow to carry around a loaded weapon on an everyday basis. A cop. The nuclear waste, as a social worry, is much higher than your cop on the corner. So, instead of looking at it like how many degrees or scientific experience this person has, but look at the social responsibility part of their resume. What professions are used to the concept of most social responsibility? People who actually carry the nuclear bombs around all wear a uniform, why do they trust them with this? Because they've demonstrated a social responsibility. Maybe that should apply for nuclear waste management. Look at people in society that demonstrate the most social responsibility.
- SA-7A You showed us the British panel and that looked pretty good and representative.
- SA-8A Two or three agencies in this province have mission statements – how are they going to relate with their stakeholders, how are they going to do things morally and ethnically, how are they going to do the right thing. But they don't. There are people in those agencies that cringe when they see certain decisions being made because they have kids and a wife and have to support it.

SA-12A I like to think social responsibility as the titanic analogy. You get the smartest person to make the boat, but who, in the end, was the most important? The person who makes the backup plan.

Parking Lot Question and Answers Discussion

[Discussion Leader]: Are they useful?

SA-8A They're useful as long as the people answering are credible?

SA-4A I like that they included the nanobyte question that I thought would get stricken out.

SA-11A The best would be if they wrote we don't know but we will find out.

3. PARKING LOT QUESTIONS

Again in Phase Two, Panelists were empowered to outline any questions they might have that was outside of the current discussion, about a specific matter the Discussion Leader could not address or simply brought up for future consideration on a Post-it note provided and post their question in the “Parking Lot.”

Answers to the Parking Lot questions posted in Phase One Citizen Panels were provided to Panelists in each Phase Two Citizen Panel. Questions asked ranged in terms of quality and appropriateness, but were all answered to the best of the NWMO’s ability.

Again, Panelists were informed that all questions put in the Parking Lot would be answered by the NWMO and provided to Panelists at a future session. The intention of the Parking Lot exercise is to continually empower and encourage Panelists to think of their contributions longitudinally over the life of the Panel.

a. Phase Two Parking Lot questions

Parking Lot questions from Saskatoon Phase Two Citizen Panelists were the following:

- What happens to the deep/shallow facilities if there is an earthquake?
- What are the potential security risks to a deep storage/shallow storage site?

APPENDICES

- i. Personnel
- ii. Discussion Leader's Guide
- iii. Discussion document: Executive Summary

I. PERSONNEL

JAMES STEWART WATT, SENIOR DISCUSSION LEADER

Jaime Watt is Chair of Navigator, a Toronto-based research consulting firm that specializes in public opinion research, strategy and public policy development.

Prior to relocating to Toronto, he was, for ten years, Chair of Thomas Watt Advertising, a leading regional advertising agency and communications consulting firm based in London, Ontario.

A specialist in complex communications issues, Jaime has served clients in the corporate, professional services, not-for-profit and government sectors and has worked in every province in Canada, the United States, the United Kingdom, France, Central America, Korea and Kosovo.

He currently serves as Chair of Casey House, Canada's pioneer AIDS hospice, as well as Casey House Foundation and is a Vice President of the Albany Club. He is a director of the Dominion Institute, Woodrow Wilson Center's Canada Institute, TD Canada Trust's Private Giving Foundation, The Canadian Club of Toronto and The Clean Water Foundation. As well, he is a member of the President's Advisory Council for the Canadian Red Cross and is a member of the Executive Committee of Canadians for Equal Marriage. He was a founding Trustee and Co-chair of the Canadian Human Rights Trust and the Canadian Human Rights Campaign.

CHAD A. ROGERS, SUPPORTING DISCUSSION LEADER

Chad Rogers is a Consultant at Navigator providing strategic planning and public opinion research advice to government, corporate and not-for-profit clients.

He has recently returned to Canada after working abroad with the Washington, DC based National Democratic Institute as director of their programs in Kosovo and Armenia respectively. Chad oversaw multi-million dollar democracy and governance assistance programs directed at political parties, parliaments and civil society organizations in newly democratic nations. He conducted high-level training with the political leadership of Armenia, Bosnia Herzegovina, Iraq, Kyrgyzstan, Macedonia, Moldova and Serbia.

Having previously worked on Parliament Hill as both a legislative and communications

assistant to Members of Parliament and Senators, he has an in-depth knowledge of Canada's Parliament and its committees, caucuses and procedures.

He is a board member of the Kosova Democratic Institute and is a member in good standing of the Public Affairs Association of Canada (PAAC) and the Market Research & Intelligence Association (MRIA). Chad has trained at the RIVA Qualitative Research Training Institute.

COURTNEY GLEN, PROJECT MANAGER

Courtney Glen is a Consultant at Navigator assisting in public opinion research, strategic planning and public policy advice for government, corporate and not-for-profit clients.

Courtney most recently worked at the Fraser Institute as a junior policy analyst in health and pharmaceutical policy. In her time at the Institute, Courtney co-authored a major pharmaceutical policy paper and contributed to their monthly policy journal, *The Fraser Forum*.

Prior to that, Courtney worked as a researcher for the Scottish Labour Party in Edinburgh, Scotland, conducting an audit of the Parliament's Cross Party Group on International Development.

Courtney has a Masters in International and European Politics from the University of Edinburgh in Scotland and a Bachelor of Arts Honours degree in Political Science from the University of Guelph.

JOSEPH LAVOIE, PANEL MANAGER (FRANCOPHONE)

Prior to joining Navigator, Joseph Lavoie worked at Citigroup Global Transaction Services where he improved communications within the Transfer Agency Systems department. Joseph achieved this objective via Web 2.0 technologies, which he previously leveraged in developing Santa's Journal, a successful viral marketing campaign that introduced Santa Claus to the world of blogging and podcasting.

Joseph has been active in numerous provincial and federal election campaigns; has provided political commentary for various websites and television/radio programs; and has served as the recruitment director for the Ontario Progressive Conservative Youth Association. In March 2007, Joseph was selected *Canada's Next Great Prime Minister* by Canadians as part of a scholarship program sponsored by Magna International, the Dominion Institute, and the Canada-US Fulbright Program. He currently serves on the Public Affairs/Marketing Team for the Toronto Symphony Volunteer Committee.

STEPHEN LEONARD, PANEL MANAGER (ANGLOPHONE)

Prior to joining Navigator, Stephen attended the University of Guelph where he graduated with a Bachelor of Arts Honours degree in History. Throughout his undergraduate career, Stephen was an active member of the Canadian Forces Army Reserve in Toronto, which he left in June due to medical reasons as a Corporal.

Stephen is head Panel Manager and plays a vital role in the management and organization of the Citizen Panel project.

II. DISCUSSION LEADERS GUIDE

PHASE TWO CITIZEN PANELS

DISCUSSION LEADER'S GUIDE

1. OPENING OF PANEL SESSION (0:00 – 0:10)

- Welcome back
- Reminder: Explanation of Panel methodology
- Confidentiality of session
- Explanation of NWMO disclosure of proceedings
 - Re-cap of Panel notes distribution and amendment
 - Feedback from Panel on process of reviewing notes
- Re-introduction of Transcriber
- Re-introduction of Parking lot

2. RE-INTRODUCTIONS (0:10 – 0:20)

- Very brief re-introductions

3. AGENDA & EXPECTATIONS (0:20 – 0:30)

- Reminder: Role of Discussion Leader
- Introduction of Panel Managers

4. GENERAL DISCUSSION (0:30 – 1:00)

- I am wondering if you thought more about the NWMO after our last session, as many people tell me that, despite their best intentions, they just go back to their daily routines without giving it another thought.
- Did any questions you would like to ask come to mind?
- Has anyone read, seen or heard anything about NWMO in the media since our last discussion?

5. CHOOSING A WAY FORWARD (1:00 – 1:45)

- You will remember from our last discussion that we looked at the NWMO brochure *Moving Forward Together*. This time, I'd like to share with you an NWMO document which summarizes the key findings from a three year study the NWMO conducted at the request of the Government of Canada called *Choosing a Way Forward*.
- I would like everyone to take a few moments to review the document.
- Did you find this document informative? Clear? Does it include information that you find helpful?

6. EXPLORING THE OBJECTIVES OF THE NWMO (1:45 – 2:30)

- On pages 6 and 7 of the Executive Summary, you will see a series of objectives of the NWMO.

Citizen Engagement

- In the Summary, under the section *Citizen engagement*, NWMO commits to continue to involve a broad range of citizens and experts alike in key decisions in the implementation of Adaptive Phased Management.
 - What do you think a collaborative process between the NWMO and citizens might look like?

Adaptability

- Adaptive Phased Management is built in part around the concept of adaptability – being able to recognize and respond to changes in society and in our environment more generally.
 - How can NWMO best respond to changes and incorporate new developments into its planning?

Social and Technical Research

- What, in your mind, might it be important for the technical and social research program to include?

Trust and Credibility of NWMO's Implementation Plans and Process

- As implementation proceeds, what might cause you to have confidence, and/or lose confidence in the work of the NWMO and its implementation plans or process?

7. PARKING LOT QUESTIONS AND ANSWERS (2:30 – 2:50)

- We committed after the last discussion to get you answers to the questions placed on our parking lot.
- We have done so and are sharing with you not just the answers to your questions, but also from your fellow Panelists in the other 7 Panels.
- Do these answers meet with your expectations?
- Do any other questions come to mind? If so, please jot them down on one of the Post-it notes in front of you and put it in the parking lot.

8. WRAP-UP (2:50 – 2:55)

- As we end our session does anyone have any remaining issues to discuss or questions to raise?
- Panel Management issues

9. NEXT SESSION (2:55 – 3:00)

- Approximate date of next meeting(s)
- Adjourn

III. DISCUSSION DOCUMENT: EXECUTIVE SUMMARY



Choosing

a Way

The Future Management
of Canada's Used
Nuclear Fuel

Forward

A Summary

Summary

Three years ago, the Nuclear Waste Management Organization (NWMO) launched a mission of developing collaboratively with Canadians a management approach for the long-term care of Canada's used nuclear fuel. We envisaged an approach that would be socially acceptable, technically sound, environmentally responsible and economically feasible. We are convinced that it is time to act decisively.

Canadians believe that our generation must assume responsibility now for the long-term management of the nuclear waste that is produced to supply our energy needs. This is an ethical obligation. Canadians want to be assured that they and their environment will be safe. And, they want a flexible approach that can accommodate new knowledge. The NWMO's assessment of the options, based on the best science and technology at home and around the world, gives us confidence that we have the necessary knowledge to meet these expectations.

The NWMO is recommending that Canada proceed in a deliberate and collaborative way to isolate the used fuel in a deep underground repository. The waste would be safely and securely contained by engineered barriers and the surrounding geology. It would be monitored and remain retrievable over time. Our recommendation recognizes that how the technical method is implemented is crucial. We intend to seek an informed willing host community. The process will be phased and transparent with explicit decision points where citizens are provided with genuine opportunities to influence progress and outcomes. We call our recommendation Adaptive Phased Management.

The Challenge of Nuclear Waste

For decades Canadians have been using electricity generated by nuclear power reactors in Ontario, Quebec and New Brunswick. We have produced almost 2 million used fuel bundles – about 36,000 metric tonnes of uranium – a number which will double if our 22 existing reactors operate for an average of 40 years each. When used nuclear fuel is removed from a reactor, it is considered a waste product, is radioactive and requires careful management. Although the radioactivity decreases with time, chemical toxicity persists and the used fuel will remain a potential health risk for a very long time.

Ensuring safety and security for material that will remain hazardous for longer than recorded history is a significant challenge – technically and socially. Any decision taken today will be implemented over many decades. Undoubtedly the program will encounter major changes in science and technology, institutions, values and political perspectives, and economic and financial conditions.

Canada's used fuel is now safely stored on a temporary basis at licensed facilities located where the waste is produced. Like many other countries with nuclear power programs, Canada has yet to decide what to do with this used fuel over the long term. That is why the Government of Canada passed a law requiring the owners of used nuclear fuel to create the NWMO. Consistent with the *Nuclear Fuel Waste Act (NFWA)* we engaged interested citizens including specialists, stakeholders and Aboriginal peoples in research and dialogue to assess the options for long-term management.

Listening to Canadians

Our study was built on a firm foundation – a mission statement integrating the elements of sustainable development; a pre-eminent focus on safety and security; a perspective that takes a long view; a framework of ethics and values; and recognition of the requirement for citizen engagement.

Canadians expect that the best scientific and technical knowledge will be used to understand the risks and identify the technical methods appropriate for used fuel management. However, scientific and technical evidence and analysis, while essential, cannot be the sole basis of our choice. While science can speak to the probability of an occurrence of an event, science cannot speak to social tolerance for its occurrence. The views of Canadian society in judging benefits or risks, and assessing the social implications of various approaches are critical to the development of a socially acceptable recommendation.

Our study was a dynamic and interactive dialogue with thousands of fellow citizens and specialists. Each phase of our analysis was shaped by those conversations and reported in public documents. Through a wide variety of techniques we sought to understand the values of Canadians, have a dialogue with Aboriginal peoples, explore future scenarios, and continually test what we were hearing.

There was common ground. Two important requirements became evident: **the approach must be safe and secure** – for people, communities and the environment; and **it must be fair** – both to current and future generations.

We came to understand that these requirements of safety and fairness have important implications. They mean:

- Our generation needs to take active responsibility to achieve a safe, long-term response to our waste problem – it is imprudent and unfair to wait any longer;
- The plan needs to have a definitive outcome, but also needs to provide flexibility along the way for future generations to make their own decisions;
- We, and future generations, need to be able to monitor the waste to ensure continued safety and be able to access it if safety is compromised or science provides better advice.

Citizens also made their views known about energy policy. The NWMO did not examine or make a judgement about the appropriate role of nuclear power generation in Canada. We suggest that those future decisions should be the subject of their own assessment and public process. Used fuel exists today and will continue to be produced to the end of the lives of Canada's existing nuclear facilities. The focus of our study was to recommend a responsible path forward for addressing its long-term management. Our study process and evaluation of options were intended

neither to promote nor penalize Canada's decisions regarding the future of nuclear power.

Assessing the Options

As required by the *NFWA* we compared the benefits, risks and costs of three technical methods: deep geological disposal in the Canadian Shield; centralized storage above or below ground; and storage at nuclear reactor sites. We benefited from the vast base of research conducted in Canada and around the world over more than 50 years.

The framework for our comparison of options emerged from the objectives that Canadians believe to be important: fairness, public health and safety, worker health and safety, community well-being, security, environmental integrity, economic viability and adaptability. It was also informed by the knowledge and expertise of specialists. Our ethical framework resulted in social and technical aspects of safety and risk being treated in a holistic and integrated way throughout the assessment.

Our analysis concluded that while each of the approaches had distinct advantages, no one perfectly addressed all of the objectives which citizens said were important.

The storage options were expected to perform well over the near term; however, existing reactor sites were not chosen for their technical suitability as permanent storage sites. Furthermore, the communities hosting the nuclear reactors have an expectation that used nuclear fuel will eventually be moved. The NWMO believes that the risks and uncertainties concerning the performance of these approaches over the long term are substantial in the areas of public health and safety, environmental integrity, security, economic viability and fairness. A key contributing factor is the extent to which storage approaches rely on strong institutions and active management to ensure safe and effective performance. The NWMO expects that these capacities will be strong over the foreseeable future but uncertain over the very long term.

The deep geological disposal option was judged to perform well against the objectives in the very long term because of the combination of engineered and natural barriers to isolate the fuel. The key weakness, however, is its lack of adaptability, which is an important objective in the minds of citizens. Over the short term, the approach was judged to be less flexible in responding to changing knowledge or circumstances. There is some uncertainty about how the system will perform over the very long term because we cannot obtain advance proof of actual

performance over thousands of years. This approach also provides comparatively little opportunity for future generations to influence the way in which the used fuel is managed. Its lack of adaptability is a weakness that may affect the performance of the system over time on other objectives such as public health and safety and environmental integrity.

This examination led us to develop another approach that incorporates the most significant advantages of the options assessed and is supported by a phased decision-making process designed to actively and collaboratively manage risk and uncertainty.

Adaptive Phased Management

The NWMO recommends an alternative approach – Adaptive Phased Management. It consists of both a technical method and a management system. Its key attributes are:

- Ultimate centralized containment and isolation of used nuclear fuel in an appropriate Geological formation;
- Phased and adaptive decision-making;
- Optional shallow storage at the central site as a contingency;
- Continuous monitoring;
- Provision for retrievability; and
- Citizen engagement.

The table that follows describes the concept in greater detail.

Representative Conceptual Design Activities for Adaptive Phased Management

Concept	
	<p>A staged management approach with three phases of implementation:</p> <ul style="list-style-type: none"> • Phase 1: Preparing for Central Used Fuel Management • Phase 2: Central Storage and Technology Demonstration • Phase 3: Long-term Containment, Isolation and Monitoring <p>Phase 1 (approximately the first 30 years): Preparing for central used fuel management would comprise the following activities:</p> <ul style="list-style-type: none"> • Maintain storage and monitoring of used fuel at nuclear reactor sites. • Develop with citizens an engagement program for activities such as design of the process for choosing a site, development of technology and key decisions during implementation. • Continued engagement with regulatory authorities to ensure pre-licensing work would be suitable for the subsequent licensing processes. • Select a central site that has rock formations suitable for shallow underground storage, an underground characterization facility and a deep geological repository. • Continue research into technology improvements for used fuel management. • Initiate the licensing process, which triggers the environmental assessment process under the <i>Canadian Environmental Assessment Act</i>. • Undertake site characterization, safety analyses and an environmental assessment for the shallow underground storage facility, underground characterization facility and deep geological repository at the central site, and to transport used fuel from the reactor sites. • Obtain a licence to prepare the site. • Develop and certify transportation containers and used fuel handling capabilities. • Obtain a licence to construct the underground characterization facility at the central site. • Decide whether or not to proceed with construction of a shallow underground storage facility and to transport used fuel to the central site for storage. • If a decision is made to construct the shallow underground storage facility, obtain a construction licence and then an operating licence for the storage facility.

Representative Conceptual Design Activities for Adaptive Phased Management	
<p>Concept (cont'd)</p>	<p>Phase 2 (approximately the next 30 years): Central storage and technology demonstration would comprise the following activities:</p> <ul style="list-style-type: none"> • If a decision is made to construct shallow underground storage, begin transport of used fuel from the reactor sites to the central site for extended storage. • If a decision is made not to construct shallow underground storage, continue storage of used fuel at reactor sites until the deep repository is available at the central site. • Conduct research and testing at the underground characterization facility to demonstrate and confirm the suitability of the site and the deep repository technology. • Engage citizens in the process of assessing the site, the technology and the timing for placement of used fuel in the deep repository. • Decide when to construct the deep repository at the central site for long-term containment and isolation. • Complete the final design and safety analyses to obtain the required operating licence for the deep repository and associated surface handling facilities. <p>There may be a need for transportation containers and facilities to produce them; processing facilities to load the fuel into transportation containers; production facilities for storage containers; and processing facilities to transfer the fuel from transportation to storage containers.</p> <p>Phase 3 (beyond approximately 60 years): Long-term containment, isolation and monitoring would comprise the following activities:</p> <ul style="list-style-type: none"> • If used fuel is stored at a central shallow underground facility, retrieve and repackage used fuel into long-lived containers. • If used fuel is stored at reactor sites, transport used fuel to the central facility for repackaging. • Place the used fuel containers into the deep geological repository for final containment and isolation. • Decommission the shallow underground storage facility. • Continue monitoring and maintain access to the deep repository for an extended period of time to assess the performance of the repository system and to allow retrieval of used fuel, if required. • Engage citizens in on-going monitoring of the facility. • A future generation would decide when to decommission the underground characterization facility and any remaining long-term experiments or demonstrations of technology, and when to close the repository, decommission the surface handling facilities and the nature of any postclosure monitoring of the system. <p>There may be a need for production facilities for used fuel containers; processing facilities to transfer the fuel from storage to the deep repository; and production facilities for sealing materials.</p> <p>The current owners of used fuel would continue to be responsible for its interim management at the reactor sites. The NWMO would assume management responsibility of the used fuel when it is transported from the reactor sites to the central facility for long-term management.</p>

Implementation

The NWMO will be responsible for implementing the approach chosen. The insights gained and relationships established during our study phase will provide a firm foundation for implementation. Our vision and values will continue to guide us as we strive to gain the confidence of Canadians. Canada has an extensive system of oversight. At a minimum the NWMO will meet all applicable regulatory and licensing requirements; our goal is to exceed them. We must ensure that our security provisions and safeguards are compliant with Canada's nuclear non-proliferation policy and international agreements.

Citizen engagement

Detailed implementation plans will be designed through dialogue with the many communities of interest who will have important roles to play. We expect to hear a diversity of voices as we seek advice and receive direction on the design of the process and the issues to be explored. In a democratic society, the inclusiveness and the integrity of the process by which decisions are taken are key.

The NWMO will be required to apply for licences to prepare a site, construct, operate, modify, and decommission a nuclear fuel waste facility. We will be required to demonstrate compliance throughout. At each step, there will be opportunity for further public scrutiny.

Financing

Financial surety means determining what costs can reasonably be expected to be incurred over the lifetime of the project, along with some contingency for unexpected events, and putting in place the financial mechanisms to ensure the necessary money will be available when it is required. The NWMO has an ongoing obligation to assess the accuracy of the cost estimates for the selected management approach and the sufficiency of contributions to cover cash flow obligations for the life of the project.

The *NFWA* sets out requirements for the establishment of trust funds to finance the long-term management of Canada's nuclear fuel waste. A total of \$770 million has been deposited by the waste owners to date. The legislation incorporates explicit provisions that these trust funds will be maintained securely, reported on and used only for the intended purpose.

Choosing a Location

Although the NWMO is not proceeding with site selection as part of this study, there has been intense interest in the considerations and principles that might influence the process. The NWMO intends to seek an informed, willing community to host the central facilities.

In the interest of fairness, we intend to focus within the provinces that are directly involved in the nuclear fuel cycle – Ontario, New Brunswick, Quebec and Saskatchewan. Communities in other regions and provinces may express an interest and should be considered. The NWMO will respect Aboriginal rights, treaties and land claims.

We propose that the siting process be open, inclusive and fair to all parties, giving everyone with an interest in the matter an opportunity to have their views heard and taken into account. The process will ensure that groups most likely to be affected by the facility, including those who are provided with the forms of assistance they require to present their case effectively.

Placing all of Canada's used nuclear fuel in a single central location will require moving it from current decentralized locations. We will need to demonstrate the safety of any transportation system to the satisfaction of citizens. On the basis of the work which the NWMO has conducted, including commissioning background papers, discussions with nuclear waste management organizations in other countries, and our understanding of regulatory requirements, we are confident that used fuel can be transported safely. The design and development of transportation plans, the mode of transport, routes, security and safety measures and emergency preparedness will require the collaborative efforts of many communities of interest.

Addressing Social, Economic and Cultural Effects

Implementation presents a significant opportunity to recognize and support a host community's vision for its social, cultural and economic aspirations. There will also be a broader set of interests beyond the immediate host community. Reactor site communities will figure prominently. All potentially affected parties must be afforded fair and equitable treatment in assessing and managing potential significant socio-economic effects.

It will be important to design implementation in such a way as to avoid or minimize disruptive impacts on the many affected communities. Where adverse impacts cannot be avoided, implementation must recognize the

contributions and costs borne by the community through appropriately designed mitigation measures. Risks can be mitigated not only by a variety of physical design features, but through institutional, informational and social measures. That will require developing the capacity for community oversight and empowering the communities to have influence in the process.

Research and Intellectual Capacity

As the NWMO implements the Adaptive Phased Management Approach, we will be committed to integrating continuous learning and adapting the plan to new ideas and technology. To do this, there needs to be a vibrant and robust research and development effort during the development and execution of the program.

The Recommendation

Adaptive Phased Management tries to find an optimal balance of competing objectives. It embraces the precautionary principle and adaptive management. Societal goals and objectives and successful technology demonstration will determine the pace of implementation. We believe Adaptive Phased Management is the strongest possible foundation for managing the risks and uncertainties that are inherent in the very long time frames over which used nuclear fuel must be managed with care.

- It commits this generation of Canadians to take the first steps now to manage the used nuclear fuel we have created.
- It recognizes that over the long term, it would be imprudent to rely on a human management system alone with its changing forms of institutions and governance.
- It will meet rigorous safety and security standards through its design and process.
- It allows sequential and collaborative decision-making, providing the flexibility to adapt to experience and societal change.

- It provides genuine choice by taking a financially conservative approach, and providing for capacity to be transferred from one generation to the next.
- It promotes continuous learning, allowing for improvements in operations and design that would enhance performance and reduce uncertainties.
- It builds confidence in the technology and supporting systems before the final phase is implemented.
- It provides a viable, safe and secure long-term storage capability, with the potential for retrievability of used fuel which can be exercised until future generations have confidence to close the facility.
- It provides for continuous monitoring and contingency against unforeseen events, either natural or man-made.
- It is rooted in values and ethics, and engages citizens allowing for societal judgements as to whether there is sufficient certainty to proceed with each step.

On the following page is the NWMO's recommendation to the Government of Canada. With a decision about the basic approach the NWMO will then be able to move forward to meet the objective of safely managing Canada's used nuclear fuel for the long term.

The path we propose, built on sound science and technology, is responsible and responsive. Nuclear waste is not a legacy issue we wish to leave to future generations. A decision to act must not be postponed.

November, 2005

NWMO's Recommendation

Our recommendation for the long-term management of used nuclear fuel in Canada has as its primary objectives safety – the protection of humans and the environment – and fairness to this and future generations.

Therefore we recommend to the Government of Canada Adaptive Phased Management, a risk management approach with the following characteristics:

- Centralized containment and isolation of the used fuel in a deep geological repository in a suitable rock formation, such as the crystalline rock of the Canadian Shield or Ordovician sedimentary rock;
- Flexibility in the pace and manner of implementation through a phased decision-making process, supported by a program of continuous learning, research and development;
- Provision for an optional step in the implementation process in the form of shallow underground storage of used fuel at the central site, prior to final placement in a deep repository;
- Continuous monitoring of the used fuel to support data collection and confirmation of the safety and performance of the repository; and
- Potential for retrievability of the used fuel for an extended period, until such time as a future society makes a determination on the final closure, and the appropriate form and duration of postclosure monitoring.

The Nuclear Waste Management Organization would implement this comprehensive approach, in compliance with the *Nuclear Fuel Waste Act (NFWA)* of 2002, and would:

- Meet or exceed all applicable regulatory standards and requirements for protecting the health, safety and security of humans and the environment;
- Provide financial surety through funding by the nuclear energy corporations (currently Ontario Power Generation Inc., Hydro-Québec and NB Power Nuclear) and Atomic Energy of Canada Limited, according to a financial formula as required by the *NFWA*;
- Seek an informed, willing community to host the central facilities. The site must meet the scientific and technical criteria chosen to ensure that multiple engineered and natural barriers will protect human beings, other life forms and the biosphere. Implementation of the approach will respect the social, cultural and economic aspirations of the affected communities;
- Focus site selection for the facilities on those provinces that are directly involved in the nuclear fuel cycle;
- Sustain the engagement of people and communities throughout the phased process of decision and implementation; and
- Be responsive to advances in technology, natural and social science research, Aboriginal Traditional Knowledge, and societal values and expectations.

The NWMO invites all interested individuals and organizations to review our public engagement activities, discussion documents, reports and research on our website at www.nwmo.ca.

or contact us at:

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