

NWMO Citizen Panels Report, Phase II: Panel Five

NWMO SR-2008-06

March 2008

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 Sault Ste. Marie, Ontario

NUCLEAR WASTE MANAGEMENT ORGANIZATION
SAULT STE. MARIE, ONTARIO 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 Sault Ste. Marie, Ontario 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 Sault Ste. Marie, Ontario Phase Two Citizen Panel was held on January 24, 2008 at the Algoma Water Tower Inn, a neutral third party facility in Sault Ste. Marie.

The Panel was held over three hours from 6PM – 9PM with 16 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 Sault Ste. Marie Panelists by Panelist identifier code:

 Panelist: SSM-1A	City: Sault Ste Marie Age: 35-44 Gender: Male Occupation: Employed, Algoma Steel	 Panelist: SSM-2A	City: Sault Ste Marie Age: 45-54 Gender: Female Occupation: Part-time cook and homecare
 Panelist: SSM-3A	City: Sault Ste Marie Age: 45-54 Gender: Female Occupation: Part-time cook	 Panelist: SSM-4A	City: Sault Ste Marie Age: 55-64 Gender: Female Occupation: Homemaker
 Panelist: SSM-6A	City: Sault Ste Marie Age: 25-34 Gender: Female Occupation: Employed, call centre	 Panelist: SSM-7A	City: Sault Ste Marie Age: 45-54 Gender: Female Occupation: Employed, community living instructor
 Panelist: SSM-8A	City: Sault Ste Marie Age: 65+ Gender: Male Occupation: Self-employed	 Panelist: SSM-9A	City: Sault Ste Marie Age: 25-34 Gender: Male Occupation: Employed full- time at machine shop
 Panelist: SSM-11A	City: Sault Ste Marie Age: 35-44 Gender: Female Occupation: Employed, finance manager	 Panelist: SSM-12A	City: Sault Ste Marie Age: 45-54 Gender: Male Occupation: Employed, Community Living Algoma
 Panelist: SSM-13A	City: Sault Ste Marie Age: 65+ Gender: Male Occupation: Retired probation officer	 Panelist: SSM-14A	City: Sault Ste Marie Age: 45-54 Gender: Male Occupation: Employed, forest health consultant
 Panelist: SSM-15A	City: Sault Ste Marie Age: 55-64 Gender: Female Occupation: Retired	 Panelist: SSM-16A	City: Sault Ste Marie Age: 55-64 Gender: Female Occupation: Retired
 Panelist: SSM-17A	City: Sault Ste Marie Age: 55-64 Gender: Male Occupation: Retired	 Panelist: SSM-18A	City: Sault Ste Marie Age: 25-34 Gender: Male Occupation: Construction

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 Sault Ste. Marie and stands alone as a record of the Citizen Panel discussion on January 24, 2008. A larger Aggregate Report on this wave of Panel discussions, including the Panels in Montreal, Toronto, Kingston, Scarborough, Saint John, Saskatoon, 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 Sault Ste. Marie NWMO Citizen Panel
Second Meeting
24 January 2008

General Discussion

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

SSM-15A After our last group I turned on the radio and was hearing about the woman who was fired about Chalk River, her job was in jeopardy at that point. When someone's a watchdog and the government gets involved and changes the rules, it makes me a little nervous.

SSM-17A I agree 100%. Let's face it, governments look towards the next election and if they can overlook what the watchdog decides for safety reasons, it makes me nervous.

SSM-14A You have to look at the point that when government appoints a committee, you have people there that shouldn't be there, political bias. This case, with Chalk River, there was an indication that they should have a backup in case there is an earthquake or something, and they overlooked that. I think appointing politicians to deal with this is not a good thing.

SSM-13A I agree with the political part but I also don't think this woman took into consideration that people in Canada and all over the world will need isotopes and I don't think she

took that into consideration at all when she made her decisions.

- SSM-7A I agree. Radio isotopes are critical. It's a very scary situation that they weren't quite sure when they would start producing the isotopes needed. I can imagine how anyone who needed a procedure or needed diagnostics would have felt.
- SSM-18A I really don't get any extra information from the people I talk to because they want to hear what I have to say, but they're concerned but they don't have the knowledge to speak about it.
- SSM-11A I don't think they understand it though.
- SSM-1A I find them uneducated. There should be more education. They had strong opinions either way though but weren't educated.
- SSM-14A I got some of the same comments that were made earlier and that was basically "not in my backyard" and the other one that struck me is why are they putting the cart in front of the horse again, why didn't they think of this before.
- SSM-4A My son was very concerned that we would think of burying it at all because he thinks it would leak into the soil. He feels we need to worry about the environment a lot more than we are.
- SSM-3A I talked to my husband about it. He feels it should go straight into space. As far as friends, I found the same thing. A lot of us know a lot from these sessions but if I hadn't been asked to come I wouldn't know anything. If it were offered to them, they would be more interested.
- SSM-9A I was talking to a colleague, a resident geologist, who doesn't have a problem with it as long as they're looking at the right structures. You can go through a lot of different structures when you're going down into the mine shaft. Where I was led to believe as long as the structure is okay, it's okay, but it's the structure above it and below it, they're all different. It was interesting to talk to geologists who know about rock.

Choosing a Way Forward Executive Summary Exercise

[Discussion Leader]: As the organization is transitioning from being a study organization to an implementing organization, they are very interested in hearing from Canadians with our ideas on what that plan should look like, what kind of attributes it should have. To help form that discussion, I thought I would share this document with you tonight.

Did people find that helpful, not helpful, informative?

SSM-11A I found it mostly informative. Some of the wording was “gobbledygook.” Some of it could be said a lot easier. Don’t think I ever came to understand “underground characterization facility.”

SSM-6A Couldn’t it just be called a storage facility?

SSM-7A To me I wondered how many people wrote the pamphlet. Some paragraphs are totally clear and some are not. I wondered if there were two or more people writing the pamphlet. Whoever wrote the green sections should write the whole pamphlet.

SSM-11A It’s like they know what they’re talking about but I don’t have a clue.

SSM-15A You have to get to the last page to see that this was published in 2005.

SSM-17A Not too bad. I had a few reds and greens. Economically feasible is a red flag right there. When you’re dealing with something like this, to be economically feasible, to lowball it when it’s Canadian health is an issue.

SSM-11A We can’t take 10 billion dollars that Canada hasn’t got. It’s better to keep it where it is now where nothing bad has happened. If they can’t do it within a limit, think of something else.

SSM-3A It wasn’t clear. It said “if we’re going to do it,” always “what ifs.” It seems like a lot of double talk.

[Discussion Leader]: Do you have any idea why they are proceeding that way?

SSM-3A I understand why, but logically it doesn’t seem to work.

SSM-7A That’s why it’s adaptive.

SSM-8A

They had the president of AECL talking about Greenpeace who had said they cannot build anymore nuclear plants because it takes 10 years to build them, and the president said that it actually only takes 5 because Greenpeace holds them up for so long. If we had a little bit more of that, the two commissions, more and more communications of that type. One of the biggest questions I have on this thing is that 20% of Ontario's electricity is produced by nuclear. Where are all the reactors? Most of them are in Ontario. So, with the size of this country, how are we going to get one place to bury all this stuff.

[Discussion Leader]: Chalk River was a legitimate dispute between two sets of engineers. Some scientists that said it's good to go and others that said it was not. Because the regulator has the power, the place got shut down. Where people were completely right is that it got resolved by politics. Legislation was passed to overrule the regulator and re-start the facility and then fired the head of the regulatory committee. It seems to me that one of the challenges for us is what happens on these issues when two groups of scientists don't see eye to eye. How would you decide what side you would come down on?

SSM-6A

You asked us what would feel better, how would they let us know. I know when I voted for the local MP, I get a newsletter every couple of months reporting on what he's done, what's going on in parliament. I think they should do that sort of thing, send us something so people will feel more informed and confident in the process.

SSM-1A

I like to break it down to something very simple. You have two groups arguing over what's right and what's wrong, how do you find out who's correct. I'm going to find out who supports them. How did one come up with yes and how did one come up with no? I want to go and see who's in the background, who's putting this stuff together? These guys might not see eye to eye because they're different organizations.

[Discussion Leader]: As an average Canadian, how do you get that information?

SSM-1A

You talk to the employees, the people who work there. Where I work, we know inside what's going on, that's how you get a good idea of what's happening.

SSM-4A

As average Canadians who don't know anyone in the nuclear industry, how are we going to talk to employees?

SSM-9A The fuel has been created since the 1970s, we have to commit to something rather than argue and debate about it. We need to get the two sides on an even playing field. The two sides can fight all they want but someone somewhere needs to arrive at a solution.

SSM-13A You said the Board decided to shut the plant down, and there were engineers on the board. I haven't gotten the impression of that at all, I thought they were politically appointed. The outside board might be qualified but I haven't seen any of that in print.

[Discussion Leader]: Canada has a national regulator for the nuclear industry and its job is to oversee all the nuclear activity in the country. Who do you imagine it would be staffed with?

SSM-13A I would suspect it was made up of people from the Liberal party and they may or may not have any qualifications whatsoever. That's not unusual. That's the way our system works.

SSM-16A You had all these people making decisions and we don't really know who they are and why they made their decisions. It would be nice to know why.

SSM-8A That was really a one person statement from the Chair of the committee.

SSM-17A Whether that's right or wrong, that's the perception we all have. If I were the NWMO, I'd be concerned that people were perceiving us that way, as merely a government shell.

[Discussion Leader]: Given that the NWMO doesn't want to be perceived that way, what do they have to do so you know they are engaging Canadians? Do people think engaging is the same as informing? I don't see it as the same. We have great ideas of how to inform people, and that might be what you have to do first before you can engage.

SSM-8A The whole concept of a consultant, you come in, study the situation, take everyone's ideas and put it down on paper. Quite often, it isn't yours, but if you can engage people in that sort of way...

[Discussion Leader]: How would you be able to judge the NWMO was engaging people well?

SSM-8A Firstly, people should list the people and say this is what they were doing.

SSM-16A Every now and then I get the little yellow envelopes that are the “Shoppers Voice” surveys and I always fill them out. Something like that, that’s a way to engage general people. Find out what people’s thoughts are, and when the organization gets the survey’s back, they can start a repertoire with the people. If they are interested enough to fill out the survey, they clearly want to engage back and forth.

SSM-3A If someone was to more clearly explain why the choices were made and then ask for feedback. Also educating people like us, they’ll get other opinions rather than just scientist so by combining the two...

SSM-17A The NWMO could use the internet looking for feedback. Take comments or have basic subject areas, and also leave it open ended and then make that feedback completely transparent on the website. Anyone can access it, including ordinary folks, supporters and critics.

[Discussion Leader]: That is what the NWMO does. This whole process will be on the internet.

SSM-17A I think the feeling of transparency is really open because people have deep suspicions about it so the more open it can appear to scrutiny, people who are really knowledgeable can look at it, digest it and tell us what their view on it is. You think it has an agenda and the brochure really speaks to that. They say they don’t have judgments but I don’t think that’s true. Throughout this entire document, with a few minor exceptions, they talk about used fuel as opposed to nuclear waste. Call a spade a spade. It’s like KFC not using the word fried anymore. After digestion, food is not used food. That makes me think they have an agenda.

SSM-1A Don’t sugar coat it. It’s dirty but we have to deal with it.

SSM-7A As transparent as the organization is, as informed as it is, how long has the website been in existence? 3 or 4 years? How many people prior to our involvement heard of the organization? How many knew it existed? You’re open, your honest, your transparent, I have no reason to doubt them, but people aren’t informed. If you want people to be engaged, usually those things happen over conflict. People become engaged when conflict arises or when there is

something at stake for them. You're not likely going to engage people until there is some form of conflict. You can create the conflict through a series of debates, bring in Greenpeace, then the news will be all over it.

SSM-17A You can get people interested before you pick a site – how much do each of the projected plans cost? Who's going to pay it? Is it going to be my grandchildren, tomorrow's tax payers?

SSM-9A What I understand is that the people who make the nuclear energy have to put into that fund, they're the ones paying for it.

SSM-17A Is it going to cover the cost of everything they're talking about here? Be up front, tell us how many billions of dollars it will be. If you don't know, say you don't know.

[Discussion Leader]: The Nuclear Waste Act passed by Parliament takes a lifecycle approach to this where the owners of the waste are responsible for it. That is the policy frame it will come from.

SSM-4A They make their money selling their electricity so the people buying the electricity, us, are still going to pay for it in the need.

SSM-8A When you think that Ontario is the pre-eminent province involved in nuclear, only 3 other provinces, why is that?

[Discussion Leader]: Alberta is contemplating building a nuclear plant.

SSM-4A It seems to be that solar panels could produce just as much power with how far they've come.

[Discussion Leader]: This organization has a very important job. They have to figure out how to do something that people are very suspicious of and have to do it in a way that engenders some sort of confidence. The central idea behind the recommendation they've made is that it's adaptive. Scientists can't see another solution now but they can imagine it happening one day. The NWMO have to be attuned to the fact that they might have to make a u-turn. How would they convince you that they were actually embracing the adaptive component?

SSM-16A Why couldn't they just write a report and start on a small scale and leave it there for a while and have people monitor it and have people see what the consequences are while they're doing other stuff.

- SSM-12A Having people working on it and at the same time have people looking forward who keep on informing the public, looking for alternate uses for the waste.
- SSM-11A Have a separate division, even if it's not totally attached to the NWMO, to do research and development. Have it separate so that we don't have blinders.
- SSM-1A If we start researching stuff that's going to be around for tens of thousands of years – if we don't know how to deal with the problem at hand, how do we know how to move forward?
- SSM-17A I know that it may be useful someday, but we can't take the chance on it in the meantime. Put that stuff away!
- SSM-8A Even bad news isn't bad, it's good sometimes. If they just brought out some sound bytes every once in a while that would create discussion. If they just said that these are things that we're thinking about and people hear it, they'll talk about it because right now they don't know about it.
- SSM-1A Even the best educated people are still only taking an educated guess.
- SSM-9A Back to what was said about it taking a tragedy to get something to be brought to light, that's sad that that is the society we live in. Will media outlets go after something such as a media release? Probably not. How do you get to the media to spread your message? You have to find ways to do it. Using different forms of media will gain trust by habit forming – for instance, every Friday have the NWMO do a report on CBC. Creature of habit – people will get interested in it and tune in.
- SSM-3A I think too, whatever community they are putting the waste in, they should hire people from the community to sit in and give their opinions.
- SSM-6A There are commercials right now for work safety. I cannot get them out of my head. If the NWMO did commercials to that effect and did the worst case scenario, that would make people think, it would get people's attention and make people want to know what's going on.
- SSM-1A The computer is a powerful tool, go to You Tube and you can find anything you want there. They need an open

system for people to go in and put their comments in. You'd have to weed through a bunch of crap but at least communications would be coming in, widely.

- SSM-3A The commercials would also involve people that didn't necessarily want to be involved and informed.
- SSM-6A If they don't do something to make themselves known to people, no one is going to be interested. If it stays in the back, no one is going to care until it becomes emergency time.
- SSM-16A Information sessions on TV would be very important.
- SSM-14A I'd like to know who's making the ultimate decision. APM comes across as a buzz word.
- SSM-8A Funeral homes have real trouble advertising. When I wanted to make a public announcement, I'd go to a funeral home and they'd give me free space.
- SSM-18A They can put links on websites for the NWMO site on google.com, city public sites. They could take an example from APTN, they had a huge 3-4 hour call in talk show so if people had any ideas or questions, they could call in and have people answer their questions. If the NWMO could do quarterly talk shows, that would show transparency.

[Discussion Leader]: One of the things the NWMO is committed to is a very robust research program and there are two streams to that research program – a technical stream which is well underway. They are also looking to do some social research to make sure there's a social consensus to move forward. They are currently having multi party dialogues and I'm wondering if there are any other streams within social research they should be doing?

- SSM-18A They should be looking at the concerns of the youth. Have one day in the high schools asking them what they're concerns are, what they know about nuclear power.
- SSM-9A In our high school, we had a teacher and it was in our geography curriculum, he spelled part of our semester talking about nuclear waste. He was always a teacher that loved to educate himself and when he found something interesting, he brought it to the class.
- SSM-17A What if the NWMO sponsored a science fair or a curriculum program? They also have these mock legal trials

that go on, why couldn't they do that? Debates? Papers? Science projects?

SSM-6A Contingency plans?

SSM-17A Anything that would engage kids where they have to do independent study.

SSM-6A It doesn't matter what age you are, as long as your old enough to understand. Kids think outside of the box.

Parking Lot Question and Answers Discussion

[Discussion Leader]: Were these clear? Helpful? Not helpful?

SSM-15A I appreciate having names of some of these people.

SSM-4A Seems there are far too many business people. I would like more scientists in there.

SSM-15A Overall, they seemed like a group of very qualified people. I thought they did a fairly good job.

SSM-11A I thought they were very conscience. The only one with more red marks is question 4, I found it unclear. They kind of went one way and then other, the rest of it though was pretty darn good.

SSM-17A I thought it was clear but I thought question 3 did the same thing. I read an emphasis on the financial part and avoided a discussion of it all together.

SSM-6A I find that the answer for question 6 doesn't fit with the question. I thought they did a much better job on question 8. That was an appropriate answer.

SSM-1A I think everything was clearly written. It seemed that questions were clear but there was back stepping. When they didn't want to answer, they got a bit technical in the talk.

SSM-4A I find question 28, the answer was alright but I didn't get what the flowchart was for. I just couldn't get through it, the answer itself would have been enough.

- SSM-2A Everything is really clear for me now. Seeing all the questions that were asked and getting the answer really sat well with me.
- SSM-17A The answer to question 25 doesn't answer the question at all.
- SSM-13A To add to that, we understand that nuclear waste is dangerous but what specifically can it do? That is not answered there at all. Why is it a danger? I still don't know that. I question some of their timeframes. I've seen a mine in production in less than three years. Also, does anything ever happen to this stuff that makes it more dangerous when it is stored? I'd like to know what we're dealing with and why we have to deal with it. They keep on saying deep. How deep is deep? They don't specify it. They only say deep.

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 Sault Ste. Marie Phase Two Citizen Panelists were the following:

- How do you cap the deep stored uranium?
- Seems to be many business people in the board, maybe more scientists needed?
- What if sites are maxed out? Who decides where next?
- We have to deal with waste but if we don’t have answers why push forward?
- Can metallic receptacles be devised to stop any prospective leakage? Titanium?
- Have they developed the transport container systems yet? If so what do they look like?
- Can google.ca and other sites that are popular to the public create links on their main pages so that people can know about the www.nwmo.com site?
- Deep depository, how deep is deep?
- If other countries use our isotopes why won’t they store our waste too?
- What are the dollar costs of NWMO proposals?
- How much atmospheric carbon would be generated by each of the proposals?

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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