NWMO Citizen Panels Report, Phase II: Panel Six

NWMO SR-2008-07 March 2008

Navigator Ltd.

nwmo
NUCLEAR WASTE MANAGEMENT ORGANIZATION
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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.

NWMO Citizen Panel Report
Scarborough, Ontario

NUCLEAR WASTE MANAGEMENT ORGANIZATION

SCARBOROUGH, 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 Scarborough, 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

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1. NWMO CITIZEN PANEL BACKGROUND

a. Citizen Panel

The Scarborough, Ontario Phase Two Citizen Panel was held on January 29, 2008 at Centennial College, a neutral third party facility in Scarborough.

The Panel was held over three hours from 6PM – 9PM with 15 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 Scarborough Panelists by Panelist identifier code:

 **Panelist: S-1A**	City: Scarborough Age: 55-64 Gender: Female Occupation: Retired nurse
 **Panelist: S-4A**	City: Scarborough Age: 35-44 Gender: Female Occupation: Employed part-time, daycare provider
 **Panelist: S-6A**	City: Scarborough Age: 18-24 Gender: Male Occupation: Employed part-time, painter
 **Panelist: S-8A**	City: Scarborough Age: 18-24 Gender: Male Occupation: Employed part-time, grocery store
 **Panelist: S-10A**	City: Scarborough Age: 45-54 Gender: Male Occupation: Employed, financial analyst
 **Panelist: S-13A**	City: Scarborough Age: 25-34 Gender: Female Occupation: Self-employed, teacher
 **Panelist: S-15A**	City: Scarborough Age: 25-34 Gender: Male Occupation: Employed, BMO
 **Panelist: S-17A**	City: Scarborough Age: 35-44 Gender: Female Occupation: Employed, print buyer

 **Panelist: S-2A**	City: Scarborough Age: 55-64 Gender: Male Occupation: Employed, health and nutritionist
 **Panelist: S-5A**	City: Scarborough Age: 35-44 Gender: Male Occupation: Employed, auto maintenance
 **Panelist: S-7A**	City: Scarborough Age: 25-34 Gender: Female Occupation: Employed part-time, sales rep
 **Panelist: S-9A**	City: Scarborough Age: 45-54 Gender: Female Occupation: Unemployed
 **Panelist: S-12A**	City: Scarborough Age: 25-34 Gender: Female Occupation: Employed part-time, educational
 **Panelist: S-14A**	City: Scarborough Age: 18-24 Gender: Male Occupation: Student
 **Panelist: S-16A**	City: Scarborough Age: 25-34 Gender: Female Occupation: Unemployed

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 come 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 Scarborough and stands alone as a record of the Citizen Panel discussion on January 29, 2008. A larger Aggregate Report on this wave of Panel discussions, including the Panels in Montreal, Kingston, Sault Ste. Marie, Saskatoon, Saint John, Toronto, and Regina has also been submitted to the NWMO.

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 Scarborough NWMO Citizen Panel
Second Meeting
29 January 2008

General Discussion

[Discussion Leader]: After the last group you thought any more about the NWMO or just went back to everyday life? Talked to friends? Family? Colleagues?

S-8A	I spoke with a relative who works in a nuclear plant who basically reiterated everything we talked about. He had heard about the plan and everything we talked about. Said it was good to know that we are being told the truth. People have actually heard about it in the industry.
S-14A	My uncle is a nuclear physicist and said the same thing, that Canada was going through with this plan. It's good it's coming to fruition, not just a dream.
S-2A	I spoke with friends who were interested to know that this was an ongoing process.
S-7A	I had a few people ask about who would be the host and what has gone into that, I said I didn't know. They wanted to know what money would be going into those communities, what they would be offering them?

[Discussion Leader]: What about anything in the news?

S-1A It's been all over the news because of Chalk River. It produces medical isotopes for a large portion of the world but the reactors are aging and they were running into problems with safety. I heard Linda Keen today, who was a government appointee. They fired her. She was supposed to appear in front of a parliamentary committee and they fired her the night before. I heard her say the acceptable risk in industry is one in a million and with the state of the Chalk River reactors, it was as high as one in a thousand so she closed the reactors down for repair, which cut the supply of medical isotopes, which created a shortage. Parliament, before Christmas, overrode her decision and said to start up the reactor again. She was testifying in front of a committee today.

[Discussion Leader]: How do you feel they handled that decision?

S-1A I think they were between a rock and a hard place.

S-2A From a selfish point of view, I required a nuclear test and I'm happy they went back online because it was delayed over a month.

S-1A They also need it for cancer treatments. They were probably right in putting it back online but they are going to have to do something with the structural problems.

S-17A They fixed one of them I believe, both were not but I believe one is up and running now. What if something did happen? If we look at our discussions and we're going to have people in charge, those in charge are actually going to have to be in charge. The government can't just step in.

S-7A How did it get this far though?

[Discussion Leader]: What I'm interested in, given that we're in the mess. It came down to a dispute between two groups of engineers. It seemed to me that what you ended up with was a legitimate difference of opinion by two groups of technical people. How do we, who aren't those kind of people, resolve it? I'm wondering if you saw any parallels in how you would evaluate the work the NMWO does? How do you figure your way through that kind of a muddle? Where you have reasonable people on each side coming to different conclusions?

S-6A Public safety.

S-10A I listened to the Minister and according to him, he had a report before it was shut down that it was safe to operate.

When he reviewed all the safety reports, he decided he should open it. Who are those making the decision and how can override it? Knowing that there would be a consequence, where was the board that could review her decision before it got to a critical point?

S-15A Those engineers were given a certain criteria to look at. If everything's within that criteria, their word should be first. If we start second guessing them, we might as well second guess everyone. We need a standard to go by. People in charge of overseeing, their word should go first.

S-1A These reactors are old, the technology is old and I think it's wrong for the medical world to rely entirely on something of this vintage. There should be backup. You wonder if there was a conflict between Linda Keen and the other group and if she was trying to show a little muscle.

S-7A There needs to be a mediator group at the top to mediate back and forth.

S-2A Mediation or arbitration but not from political masters. Rather than be fired, she should have had a say and compared her information with others. It was clear that the politicians didn't want to have a discussion. There should be something set up so the public can be protected and have their hearing.

Choosing a Way Forward Exercise

[Discussion Leader]: I can tell you that the brochure we reviewed last time will look very different when it is redone thanks to your input. The NWMO has taken your input very seriously. I reported our findings from the last panels to the leadership last December and we had a very good turnout, they were very interested in what you have to say. I brought another document to give us a bit more information about how this work and what they mean by APM and the recommendation the NWMO has made to the government, which it has accepted.

Let's chat about this summary. What were people's thoughts? Was it helpful? Not helpful? How did it do in terms of clarifying the proposed recommendation that the NWMO made to the government that has now been accepted?

S-6A I thought it was good, descriptive and gave a lot of information on every different area. Page 6, it breaks down everything which I found helpful.

S-13A I thought it was well written in layman's terms, everyone could get an understanding. Just the introduction, the three paragraphs in the green, it was clear and concise. No industry words, no jargon.

S-4A Recommendations were very clear, easy to understand and helpful.

S-14A When they talked about APM, people outside of this circle will not research it but this did a very good job of explaining it. This did a great job of showing exactly what they are going to do.

S-6A It shows a commitment, them looking that far ahead.

S-14A Them laying out APM the way they have shows they are thinking what the future does hold and what might come up in terms of technology or whatever.

S-8A I agree, there's even the sentence on the first page about it being a significant challenge. We don't know all the in betweens, it's a nice way to get the idea started. We don't have all the answers today but hope that for tomorrow we will.

S-16A I liked that it was broken down – we're listening to Canadians, assessing our options and here are our recommendations.

[Discussion Leader]: Anyone think this 60 year business is crazy?

S-1A It shows the enormity of the task. It's two phased – shallow and deep storage. Plus it will take a lot of time to transport the used fuel rods. It will take about 30 years to ship everything. It sounds crazy.

S-8A To me, it sounds like they're stressing a point that it is such a dangerous issue and will take a long time, but at the same time we're just covering the things right now in concrete and that seems to work really well. You can just pour the concrete on the rods and it's not harmful. But it will take 30 years to build the shallow storage, which they will then decommission, and the will take 30 years to dig the big hole.

S-15A I don't think it's crazy. Given the fact that you have to give yourself buffer space. Really, it's a drop in the bucket in

the grand scheme of things. There are a lot of things you need to go through to make sure these things work. It involves trial and error. We would not want it to be such a short amount of time so we're bound to make an error.

S-2A — I did find the pamphlet was a little bit verbose. It should be more concise and maybe with an appendix so if people want to get into the "nitty gritty"…

[Discussion Leader]: Isn't that for the report?

S-2A — If people want to get involved in a lot of writing, they can do that but if something that grabs their attention, rather than do a lot of reading…they may lose motivation in the process.

S-14A — I agree with S-15A. 30 years doesn't seem like a long time but there are still so many issues we need to address. How are we going to transport? What if it leaks out? It's better to be preventative than be like "what now?"

[Discussion Leader]: I thought 60 years was crazy at the beginning, I thought "dig faster!" It turns out that's not true. It turns out that going as fast as you can, it is going to take about 60 years. Here's why. By the time they find a place to put it, get all the approvals, build containers, test them out and so on, when you make a project plan to do all that, it takes about 60 years, which is where the temporary shallow storage idea comes in. They built into the plan an option to do something with the material before 60 years is up.

S-17A — They haven't even found a place yet. No one is going to want it in their backyard. It's going to take a lot of convincing and ground work. It's a big sell.

S-2A — The phenomenon of casinos, the host communities benefit directly. To convince someone to be a host for something like this, there should be some type of benefit for the community. People still have a question in their mind, even if it's a small one, if you are a host community. Where is our benefit? I think there has to be a little bit of candy held out to a host community. No one is going to want to do it as an altruistic thing.

S-13A — On the opposite end of that, look at the influx of population to Pickering. Maybe it won't be that hard to find a host community. Pickering has gone from a town to a city and there's no incentive to live there.

[Discussion Leader]: When you're talking about a community, often you're thinking of a build up place with people churches, etc.

S-1A I see it in the wilderness.

S-8A When I get a picture in my head, there's nobody for 50 miles.

[Discussion Leader]: One thing the NWMO has committed to do is engaging Canadians like us at each step along the way. In order to ensure that they have Canadians support as they move forward, they want to make sure they are engaging Canadians as they move forward. What would engagement look like? What would they have to do so you would know they are taking seriously their commitment to engage Canadians?

S-6A Hold a picnic or something.

S-10A Go to the Northwest Territories or something.

S-1A What about something on television, a townhall meeting. They could have citizens selected to be in the studio and people can ask questions of the experts on the panel.

S-15A Visit university and college campuses. Kids have that power to sway people and are usually more open minded to new concepts and ideas. I would use that population to push it through the rest of the population.

S-2A A relatively inexpensive way to engage the public is through the internet. Perhaps have an interactive site, even advertised in the media, with some types of incentives for people to participate. If there was some type of incentive for people to participate. It would be a great way to engage most people.

S-9A I think the internet is a great place to get people involved but people have to be told to go there, I would have never thought to go to that site. I agree putting commercials on TV so people know about it. If they had some sort of commercials that entice people to go to the sites.

S-17A Even getting something like this to people, but you have to warm people up by advertising. Let them know this is coming to their door.

S-14A But it wouldn't appeal to me if that came through my door. You need to get the point across that it's important.

S-16A You always go and check the mail to look for your bills, internet and email people don't always check.

S-4A Some kind of survey could be conducted over the telephone or the internet.

S-13A As someone who has been home all year, I never pick up the phone if I don't recognize the number.

S-4A They tell you to go to a site, fill out a survey and you get paid for that.

S-13A But where does that money come from? It's not going to be in the trust fund for this. Then you get people wondering if they're taking money away from a safety fun?

S-8A Could they have scientists do independent research at the facility as a way of financing?

[Discussion Leader]: Given that this is a complex thing, our job is to help the NWMO as it becomes the organization with a responsibility for implementing this plan. What are the kinds of things they can do so they will have a fighting chance to have the confidence of Canadians? For example, at some point, they're going to have to engage communities that might be interested in hosting the repository? How might they engage those communities?

S-14A You know the rock they want to put the material in? Where are these locations?

[Discussion Leader]: They are located in all four of the provinces they are considering.

Any ideas on how they would engage these communities?

S-12A Some kind of update.

S-8A Broadcast. Even something on You Tube. That way you get to see somebody's face.

S-2A They have to direct themselves towards smaller isolated communities that could perhaps be influenced, given knowledge, and perhaps be able to see benefits for themselves. If you try and do it in larger communities, you'll have a lot more dissent.

[Discussion Leader]: What does the engagement plan look like?

S-2A If they bring knowledge to these communities, they would be accepted much more readily. They have to understand the plan, that there is a certain amount of safety for them in the plan and that there's a long term benefit.

S-7A I was thinking that about the smaller communities, but I think it's important to send humans there. Have a place where people can come and talk to people face to face.

S-5A A town hall is important but also important to send them something like this summary so they are more informed and will have questions to ask.

S-15A We should take the adaptive phased approach with humans. Want to take away the element that a corporate board is coming in and telling them what to do. Educate them and them make it a more collaborative process. Put together a board where specific individuals from the town will sit on the board.

S-9A The local newspaper. Having write ups in the paper, in more than one, and then they have a group where people can go and ask their questions. Then some sort of follow up, maybe a flyer or something that people can read in an open way.

S-14A I wasn't too informed and didn't care about climate change and then I saw this commercial emphasizing the question "who's going to take care of our generation."

[Discussion Leader]: I understand how TV informs, but not how it engages…

S-14A Associating an emotional factor to it is important because it stresses the point that this is important and has to be dealt with. I read the newspaper, I listened to the news but if I see a flyer I will throw it out. TV is one way that could reach and engage a lot of people.

S-10A There are so many mediums of communication in this country. You just need something that will catch someone's attention.

[Discussion Leader]: Central to the NWMO's recommendation is APM. I'm wondering as the organization moves forward with it's operational plan, as it begins to put together it's plans to get it's work done, how will you know it's honouring its commitment to be adaptive?

S-6A They would have to show that they are up to date with contemporary science.

[Discussion Leader]: How would they show you that?

S-10A Regular updates on what they are doing, updates to let us know if they are doing what they promised to do, where they're at…

S-6A A newsletter or something.

S-15A I think it is going to require a sub group or sub organization who's sole purpose is the adaptive portion of the entire management. That becomes their work. As a single entity, there are no checks and balances.

S-2A At the beginning of the evening we discussed the question of something that has impacted the news very greatly. Only 50% of the people here at the table who have some involvement were aware of what was going on. So the question is, to bring this forward and have a large element of the community be involved in it, we have to start looking at hiring publicity organizations that make it their business to see that it is an issue that more and more Canadians become involved in. You tend to sit back and say it won't effect me personally and if it's going to go for 60 years, it won't even be in our time. To start thinking long term, there has to be a strong effort into the daily life of Canadians.

[Discussion Leader]: How would you know the organization was following through with its commitment to be adaptive?

S-14A What Switzerland has done is held a subgroup and advertised throughout the entire country about the word they are doing with particle acceleration, explaining what the process will entail.

[Discussion Leader]: For this to work for the NWMO, they need social permission. That can only come if people think they have their act together and know what they're doing. That can only come from people like us. What do you need to see there to know that they have their shit together?

S-17A You need something that's timely. Sort of like every new years, show where we've come, what we've done. Not everyone is going to give a hoot what happens in 60 years.

[Discussion Leader]: One of the things we talked about earlier is that there is discussion going on by other governments to produce more nuclear power, expand the uses of nuclear power generation. Putting aside whether we think that's the best way to go, how does that impact on the NWMO's work? Does it change what they've recommended? Make what they're recommended more appropriate?

S-7A When I saw that it would take 60 years, I thought that made sense because there's so much of it. That's why I always thought it was adaptive because they might put up more plans, and it might take that much more time.

S-10A I think that the NWMO and the government is already planning. The government has always said nuclear is the future of Ontario. I think this would already be factored into these plans.

S-8A Obviously to emit no greenhouse emissions, nuclear is the only one. I think it makes the NWMO's work more serious. Talk about having a candle under your butt. It might effect the size of the facility. I found one thing in here a little bit weird – the option of digging it into a big hole is the least adaptive and to think that if we're building more, there will be more of it. It would be terrible to one day have to build another hole.

S-9A When I first heard that up until now there was no plan, I was wondering if there's a campaign to let people know that this stuff is lying around and we don't have anywhere to put it, if that would perk people up and getting more discussion going. Just making people aware. We're all a little complacent on this issue.

S-15A It's possible that in the future, you will have to decentralize the NWMO in order for it to work efficiently. If Alberta starts to put out their own plants and other regions follow suit, the output will start to multiply.

S-10A I read about a study in France about scientists thinking about uses for nuclear waste in the future. If they find out they can reuse, there won't be a need to find space…I think the NWMO might be aware of it, something about the future.

S-8A How do you get people believe what they're saying is true, I think that could happen through having this being the most advanced, safest nuclear facility and research on what

could be done with nuclear waste in the future, come up with a way to use it or even power the plant.

[Discussion Leader]: Do you think they've figured out how to produce this stuff with less waste?

S-10A Yes.

[Discussion Leader]: We talk about research a lot in this line of work. On the technical side, the NWMO is involved in all kinds of research projects. They've commissioned research, formalized agreements with 4 other countries, I think it's somewhere between 11 and 12 universities they have formal agreements with. From a technical side, there is a robust research program. The organization also has a commitment to a social research program. This is part of it. They also have a series of people who represent groups. As you think about going forward, what else should the organization be considering in terms of the approach it's taking to social research?

S-4A More social guidance.

S-8A I think it would be nice if they had a bursary for nuclear related programs so more people will go through and be educated.

S-7A This book, for example, it was done in 2005. Who got that?

[Discussion Leader]: It's on the internet, probably the group that participated in it. What they're saying how do they go from being a research organization to an implementing organization. As they move forward on that implementation, the NWMO has said they would be guided by certain objectives, as we have discussed. The two that we're more or less focused on today is the idea that the NWMO must move forward in a way that is not just technically sound but also socially acceptable.

S-7A Let's look at it like this. There are a lot of Canadians that know the plant is there, but unless it effects them personally, they don't care.

[Discussion Leader]: That's why I'm not looking at critiquing the brochure, but you have to inform before you engage. Anyone have any other ideas on that research side, what you'd expect to see?

S-8A I find it follows the same way as when you introduce a new product. There are a small amount of people that will know about this at first, and they will inform others and then it will peak. As the plan is going to take 60 years, it's a very careful way that you have to introduce it. The same message persisting is more of a how than a when.

S-13A We need a face to put to the topic that becomes a part of our social norm. We know the face of our Prime Minister so we know what to expect. We need either a face or a bunch of faces so that we can follow.

S-7A Something you can attach to.

S-1A Making it more high profile, that's the way they're going to do it.

[Discussion Leader]: Chalk River was high profile…

S-1A But that story was reacting to a story whereas we're talking about something that affects everyone and has reached a tipping point.

[Discussion Leader]: But our lack of knowledge about Chalk River as people who live close to a reactor and are engaged in these groups shows how truly hard it is to get people involved.

Parking Lot Question and Answers Exercise

S-14A What's the deal with Chalk River? Why do they produce so many medical isotopes there?

S-1A I think it's just a research facility.

S-1A This was a good idea, putting this flow chart in. It breaks it down really well.

[Discussion Leader]: How did these do in answering your questions? Helpful? Clear?

S-12A Pretty clear. I wouldn't say any of them were not helpful, some of the things were kind of vague.

S-13A Some of the answers were bureaucratically polite, like question 8. It just doesn't give you any insight on it. Question 1, last sentence, I've seen this exact sentence in so many things we've done. We're going to find the most reasonable sound community. Stop saying an informed and willing host.

S-8A Question 44. It says see question 25, but question 25 talks about the approvals process. If they don't know, it would be much nicer to hear "at this time, we have not yet decided…"

S-7A	That's the integrity part that comes through. Answer it the best you can. If you don't know just say you don't' have it but don't do that.
S-2A	I felt that for the most part the answers were fairly straight forward. I had questions similar to yours. For the most part they were concise and to the point.
S-9A	I liked a lot of the answers. Question 33, I don't think they answered that one well but overall they did a good job.
S-17A	Overall, I think we have to know that they don't necessarily have the answers, that's what adaptive is. As long as they can be honest and up front, then that's good.
S-14A	I like certain honestly in regards to some questions, like question 27. They state that it's not our intent to…another thing I thought was important was what would happen to a site if it was attacked by above.
S-7A	What about question 9, I don't think they answered that question at all. That's not an answer there at all.
S-14A	I thought question 36 was unclear but that's the nature of the question.
S-7A	In question 18, why are we not looking for a willing host.
S-14A	It answered it in a prior question about how every country has to deal with it's own waste.
S-17A	They have been consistent in saying that.
S-8A	It would be nice with question 8 that there was a date for question 8 since we say we are on par with these countries.
S-1A	Some of these were good, some were vague. Question 44 refers you back to question 25 which doesn't say anything about the leakage. Question 36 is a funny one. Why did they even put it in?

2. 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 Scarborough Phase Two Citizen Panelists were the following:

- If stored in shallow area prior to deep hole would that bypass environmental study?

- Why are other countries repository target service dates much closer than ours?

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

nwmo
NUCLEAR WASTE MANAGEMENT ORGANIZATION
SOCIÉTÉ DE GESTION DES DÉCHETS NUCLÉAIRES

Choosing a Way Forward

The Future Management of Canada's Used Nuclear Fuel

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 safety 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	A staged management approach with three phases of implementation: • Phase 1: Preparing for Central Used Fuel Management • Phase 2: Central Storage and Technology Demonstration • Phase 3: Long-term Containment, Isolation and Monitoring Phase 1 (approximately the first 30 years): Preparing for central used fuel management would comprise the following activities: • 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 *Canadian Environmental Assessment Act*. • 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	
Concept (cont'd)	Phase 2 (approximately the next 30 years): Central storage and technology demonstration would comprise the following activities: • 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. 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. Phase 3 (beyond approximately 60 years): Long-term containment, isolation and monitoring would comprise the following activities: • 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. 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. 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.

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 through transportation, 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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