

NWMO Citizen Panels Report, Phase II: Panel One

NWMO SR-2008-02

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 Kingston, Ontario

NUCLEAR WASTE MANAGEMENT ORGANIZATION
KINGSTON, 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 Kingston, 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 Kingston, Ontario Phase Two Citizen Panel was held on January 19, 2008 at the Ambassador Conference Resort, a neutral third party facility in Kingston.

The Panel was held over three hours from 12PM – 3PM with 14 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 Kingston Panelists by Panelist identifier code:

	City: Kingston Age: 55-65 Gender: Male Occupation: Self-employed, computer consultant		City: Kingston Age: 55-65 Gender: Male Occupation: Employed, Conference Board of Canada and law professor
Panelist: K-1A		Panelist: K-2A	
	City: Kingston Age: 25-34 Gender: Male Occupation: Stay at home Dad		City: Kingston Age: 65+ Gender: Female Occupation: Retired
Panelist: K-3A		Panelist: K-4A	
	City: Kingston Age: 25-34 Gender: Female Occupation: Employed, kindergarten teacher		City: Kingston Age: 55-64 Gender: Male Occupation: Self-employed, financial planner
Panelist: K-5A		Panelist: K-6A	
	City: Kingston Age: 25-34 Gender: Male Occupation: Retired		City: Kingston Age: 35-44 Gender: Male Occupation: Employed, Development and recruitment officer
Panelist: K-8A		Panelist: K-11A	
	City: Kingston Age: 45-54 Gender: Male Occupation: Unemployed		City: Kingston Age: 18-24 Gender: Female Occupation: Employed, cell centre representative
Panelist: K-12A		Panelist: K-13A	
	City: Kingston Age: N/A Gender: Male Occupation: N/A		City: Kingston Age: 35-44 Gender: Female Occupation: Self-employed
Panelist: K-14A		Panelist: K-15A	
	City: Kingston Age: 25-34 Gender: Female Occupation: Student		City: Kingston Age: 35-44 Gender: Male Occupation: Employed, stationary engineer
Panelist: K-16A		Panelist: K-17A	

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 Kingston and stands alone as a record of the Citizen Panel discussion on January 19, 2008. A larger Aggregate Report on this wave of Panel discussions, including the Panels in Montreal, Toronto, Sault Ste. Marie, 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 Stephen Leonard, a Navigator research professional.

b. Panel Notes

Report of the Kingston NWMO Citizen Panel
Second Meeting
19 January 2008
Panel Notes

[Discussion Leader]: I'm wondering if after the last group, you thought any more about the NWMO or just went back to everyday life? Did you talk to friends? Family? Colleagues?

K-3A Chalk River in the news brought it to mind. When something relevant happens, I think about what we talked about here. The fact that the facility was old and largely ignored added an element of urgency to what we are talking about. I would like to see steps being taken to retro fit the facilities to make them safer and get rid of the waste being stored on site. Knowing that there's potential for malfunction, I'd like to see the waste removed.

K-2A I was surprised Chalk River was so laxly operated. It required massive updates, and obviously the agencies and government have not been putting the money into it that they should be. They have spent money at focus groups like this to look at the future but I'm just surprised at how lax the system is with the inherent danger. Chalk River strikes me as being laxity at its best.

K-12A They had an opportunity to bring online two new facilities to fix it, but everyone was ducking the problem. If they were in a private company they would be fired years ago or in jail.

K-14A I read an article about Canada signing on to some international pact about nuclear waste storage. I am concerned that if this is what we are working towards, we not only have to worry about our own waste, but storing international waste?

K-1A My concern about AECL is what is coming out in the media. I don't think it's as bad as the media is letting on. My concern is how the actual facts get presented to the community. This situation we're in right now, there is a lot of information that comes out and is misleading. For instance, the isotope shortage was known about in advance. The pharmaceutical industry knew there was going to be a shortage of isotopes. It gets put into the media and it's misleading. It's very important that somehow, somehow, when this thing gets presented, it's presented in a factual way.

[Discussion Leader]: Are politics a big part of what happened in Chalk River?

Panel consensus that yes, politics played a big part.

K-1A Of course the politicians get used to the power and influence and are more interested in that than doing the right thing. As this thing progresses, it wouldn't hurt to have a work group with the actual producers in conjunction with politicians. This way everyone is informed of what is happening now.

K-12A I wasn't actually blaming the people running the facilities, but the people in those communities who were making all the noise and pointing at people to change stuff when they had the power to change it themselves.

K-11A What concerns me the most is when a minister with no expertise can overrule and fire an expert in the nuclear field. I heard the Harper government was talking months ago about selling AECL. When you have government interference overlooking the problems at Chalk River, it makes me wonder even more where the government is going. If the government is behaving that way, can you imagine how the private sector would behave when they are motivated by profit? This will be an election issue.

[Discussion Leader]: Some people see it differently at its core. Some people tell me it is a dispute between engineers on two sides of the issue. One side says it's safe to run, and we need the isotopes. The other group saying no it is not safe. The question is what happens when you get that dispute. Some see a parallel between that and the work the NWMO is doing. It's easy when there is a consensus. But how do you resolve it when there is not a consensus? Where you have reasonable people on each side coming to different conclusions?

- K-12A People are always going to have two opinions about things. Say this organization makes a recommendation, the government can just say "oh, we don't want to do that"?
- K-6A If they had properly planned so that there wasn't one nuclear reactor in the world producing these isotopes....
- K-13A Could you not bring in a third party to mediate? That doesn't have its own opinions and balance the issue?
- K-1A I don't think the political decision is actually wrong, they had to step in. They have always run the AECL way on the safety side, there wasn't a middle of the road. The minister and Prime Minister did not make this decision just by deciding it is not safe. There was definitely a margin of safety. From the media perspective, this wasn't brought forward.
- K-2A The key is getting experts to validate your case.
- K-8A You have a conflict of interests between the politicians and scientists. Politically, you have to look good or you don't get re-elected, which doesn't mean they made the right decision. If we had an independent group of experts to assure us if it's safe or not safe...someone made a better selling job than the regulator.

[Discussion Leader]: Should the regulator decide when everything is shut down? It is not a benign decision because it affects people who need the isotopes. This is the kind of thing the NWMO may have to do, so it is useful to think about it.

What was clear after last time is that we are just getting our heads around Adaptive Phased Management. I have here the Executive Summary of the report that was provided to the government. It will summarize the report and clarify some concepts and directions we will be taking. I would like you to mark things that are helpful or informative, even if you do not like it. Mark things you do not find helpful or find confusing in red. If you find it helpful and understand it, mark in green.

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?

K-5A It was helpful, made sense. I particularly liked the chart on pages 4 and 5. It just explained it all and the timelines gave me an indication of how long this would take. I liked how it outlined who is going to pay for this process and at what point the NWMO becomes responsible for the nuclear waste. And to see the final recommendations helps me to understand.

K-16A It was very balanced. The timelines for transporting it, I had no idea. I thought it was interesting. It does fit, but it seems a bit off. They don't seem to be mentioning it anywhere else. Once they mention it, it's going to be nerve racking for people. It does fit into the plan, but I had no idea when I read that.

K-1A In the manufacturing, in Phase Two, they talk about building the containers. I think that should be in Phase One. Then they have the paragraph about the used containers in Phase Three, and I think that should be in Phase Two. It's all very well planned. When you talk about Adapted Phased Management, it's warm and fuzzy but they've done a good job putting the "meat and potatoes" in front of you to explain what the concept is, in my opinion.

K-6A I thought it quite helpful. I mean, you know we're not naïve readers anymore.

[Discussion Leader]: How much of it do you think was because you are not a naïve reader?

K-6A I think it was good but it's hard to separate because I already know something about this. If I hadn't, it might

have needed more explanation. It was easier to read this knowing what I do about the NWMO. “The Challenge of Nuclear Waste” is a great introduction. I don’t like the word “characterization” in the facility context.

[Discussion Leader]: Anyone know what that means?

K-12A It means it is specifically designed for that purpose.

K-6A The last two pages were a good summary.

K-4A I don’t understand this involvement and engagement for citizens. I don’t think we, as citizens, would have enough knowledge to have input for this. I would not be an expert at finding a suitable nuclear waste site. I would like an expert involved.

[Discussion Leader]: Did you find it helpful?

K-4A Page 4 was very useful when it discusses the used nuclear fuel. Good overall document.

[Discussion Leader]: Is it better than the last document?

Panel consensus that yes, it was better.

K-2A The one thing that keeps running through my mind is that they presuppose there will be a willing host community. That sets up a major roadblock because I don’t think there will ever be a willing host community. Wherever you try and put this, there will be significant opposition to this plan by a significant amount of people. Where do you go from there? There’s going to be a lot of people that don’t want that, regardless of the scientific ability.

[Discussion Leader]: When we say community, we imagine Kingston or a town. Do you imagine it could happen in a remote place?

K-2A Then they’re using the wrong term. They need to have a plan to deal with the inevitable opposition.

K-12A Two things. I like the idea of what we are doing here. The NWMO gets to hear about what people are thinking, to some degree. It’s not hidden, like it has been in the past. One of two problems with the whole thing, otherwise I love it, was making the problem ethical when it is a pragmatic

issue. Ethics goes out the window at this point, we have to do something about it. You really should add “pragmatic” next to that. It’s both pragmatic and ethical. Another thing I thought about was the idea of redundancy, like having a second waterline in case the first one goes down. Is the idea of a second, if not smaller, space to put it in case something goes wrong where they are? They should move up some of the things they’re looking at. They should be already made and ready to go. Otherwise, it’s great.

K-1A To redress, the shallow concept versus the deep geological addresses what you’re talking about to a degree. As their knowledge grows, they will know the place to put it. I see them making a shallow one and slowly transferring it to the deep facility. The one point I had here is on page 2. I don’t like the word “fair”, nothing is “fair” in retrospect. It’s a great document.

K-6A If something could be added to this, it would be the emphasis on the necessity of having to do this and the necessity to go nuclear in our energy production. There is a sense that nobody would agree because nobody thinks nuclear is a good idea. We tend to be a society that does not accept responsibility for what we do in terms of power consumption. If you put the waste with no live community, that would be the worst thing. You find any environmentalist that has a point to come there. If you find a community that wants it, then it gives it more credibility.

[Discussion Leader]: Through the whole study phase the NWMO went through it was rigorously agnostic as to the future of nuclear power in the country. Because, even if we stop tomorrow we still have this waste. What I hear from you is that, now that they are moving from the study to the implementation phase, one of the ways they will convince Canadians is linked to the future that you cannot keep a separation between the two in the future. If you get realistic the decision is taking a risk.

K-6A If their mandate is to be agnostic, that’s fine, but they still need to emphasize that we have this stuff, we have to deal with it. People need to change their views on nuclear power before they change their view on nuclear waste. If people saw the benefits of nuclear power first, then they would come around.

K-17A The government of Canada passed a law making all owners of used nuclear fuel follow or be consistent with the Nuclear Waste Act.

K-2A The supposition is correct but who's going to follow it to the letter? There is a difference between the law and how it is enacted. It is open to interpretation. The way that judges and officials see the world may be different than how everyone else sees it. People can always worm around words and twist them to their own way. In engineering and science, 1 plus 1 equals 2. Lawyers come at it from a different point of view because the human element that can corrupt rules and laws. It is all about who is on the Commission and who has tenure. Can they be dismissed by the government at will? It is critical who is on the Board. There should be parliamentary foresight. If you think regulators control things well, it's so incestuous because the regulators and regulated are in bed together.

K-12A Does that suggest someone we put in place should be from another country?

K-2A No, because they would have their own agenda. You need someone experienced with a known track record. Bias is inevitable.

K-3A The document was great in explaining what the NWMO was going to do, but I found it did not say who they were. The last document had pictures and names of people so you could put faces to the names. I found that more informative because I could connect to it personally. The small part sandwiched between the study process and findings should be expanded in order to make the problem seem more real.

K-12A If you are trying to narrow your concept then do that.

[Discussion Leader]: One of the things the NWMO has committed to, as seen on page 6, is to continue to engage Canadians. Adaptive Phased Management is a long-term plan. What the NWMO is doing is preparing their strategic plan, their implementation plan. One of the things they said as they begin to do that is they will make sure citizens are engaged. I was wondering about who you think would be important to involve, how you would ensure the right people were involved and how you would know that the NWMO was living up to its commitments?

K-17A Set up a watchdog that is hard to corrupt, would have to have no agenda and have enough money to be hard to corrupt. Totally independent, no way of getting more money, one way or another.

K-8A I think there will be a community that will accept the waste. It will all depend on the advantages and benefits the community will see. There's going to be protests but if we're going into the democracy mode, somewhere, sometime it will happen. Back to the question. It's just a matter of finding out, even if we did not put up a watchdog, the same thing will happen. We will never be in the situation where we know that everything is being done properly. We just have to look at the results and hope that people sitting on these communities are living up to their promises.

K-17A Maybe one year terms?

K-4A The problem is here, what we need is a solution to get on with it.

[Discussion Leader]: How would you know the NWMO is living up to its commitments? Who should be involved?

K-16A They would need the media and local government involved, large articles that reach a large amount of people and inform them about issues. There would have to be community seminars and information sessions when looking for willing host communities.

K-1A One of the best watchdogs we have in the federal government is the Auditor General. As far as meeting their strategic plans, that's probably the best methodology. As for citizens, I think what we are doing now could continue on as the thing progresses. We have made some impact on this group and as they continue along, people who are informed. There seems to be a lot of concerns about objectives from communities. I have talked to different groups and oddly enough they are not concerned with nuclear waste being put in their community. The general trend is whatever energy is cheaper will be accepted. Nuclear energy is far safer today.

K-5A I think that information in a hydro bill would be read or some kind of yearly event or promotional blitz to make people remember it, look forward to it. Or maybe attach it to a certain event like Earth Day so it resonates in peoples mind. Also, if you use the education system, those who are educated know will be educated and will have understanding by the time they're 35.

K-12A We have to look at where it is coming from as well. I hope someone is looking at how to take it out of storage and make more use of it in the future. Is there anyway they can make it no longer an “if”?

K-14A In the brochure they eluded to other options. I liked the recycling idea, but the fact they say it is too expensive will not go over well. If the by-product can be used to make weapons, that’s a little scarier. But you find your way around it...I don’t see any argument as to why we are not pursuing other options.

[Discussion Leader]: Let us build on K-14A’s point. I understand recycling is not a safe or reliable source. That is why they have the adaptive component. Sometime in the next years that may be an option. This allows them to divert when the time comes. For now let’s just accept that recycling is ideal but not feasible. What would they have to do so that you know that they were doing enough research on the technical side to recycle to trust in the APM idea?

K-14A One of their main principals is to be transparent, so it should all be available to the public. Proactive disclosure.

[Discussion Leader]: How do they convince you that their reporting on their plan is taken from the science side of it?

K-14A Watchdog for one, continual citizen engagement.

K-12A More legislation and communication from workers. They’re the ones on the front lines with all the information. With job security, they would not feel threatened for speaking their minds.

K-3A The emphasis on retrievability. As long as people know that we still have access to the waste and it is planned for possible future changes in technology.

[Discussion Leader]: People are worried that once they commit to a facility, that they will put all of their resources into that and not into the bigger “mousetrap.” They worry they become fixated towards a single goal, and not be aware of possible alternate solutions.

K-3A I think public pressure would help ensure their awareness.

K-13A Who is to say the company will be similar at all 30 years down the road? Who’s going to say it has the same values

or employees? There needs to be a watchdog to ensure the company is still secure and focused.

K-6A A constant public relations strategy of saying current options and explaining if they are realistic or not.

K-2A You could also have a regulatory commission that has to report once a year on all the new developments and their pros and cons.

K-17A The NWMO is made of different components, these should not all report to one component and then to the public. Each component should be separate. Each component should report their own findings and discoveries and has to be able to report to the public independently of each other.

K-2A You will need a regulator to ensure the information is accurate and to give appropriate information to the media to ensure transparency. You need the press. They're your vehicle of transparency.

K-1A You're making this too complicated. Your controls come from tying the recycling and the future to the present production. They're going to be the watchdog for you. As your nuclear developers are coming up with this stuff, they're going to figure out how to recycle as well. As nuclear energy develops eventually they will discover a different use or method of disposing with the waste.

K-6A If they want to convince people they are looking at research for alternatives, they could fund research in recycling alternatives would reassure people they were aware of various ideas.

[Discussion Leader]: The NWMO has a very technical research department working on many fields. One of the commitments they have is to move forward meeting the social values of Canadians so they are developing a social research program to compliment the technical research program. That is why we have these groups. They also have multiparty dialogue with members of different groups. I am wondering what your thoughts are on that social research, and any things you think they should be doing to build a social research base.

K-5A With the social research, are they trying to find out what people think? Or advance people's thinking through education?

[Discussion Leader]: Education would be an outcome of that. You would use the research to determine the most effective ways, to understand better the ways Canadians want to see the NWMO move forward.

K-8A Familiarizing people with what is behind your energy would help that by putting information in their bills to inform people. People need to understand it is a “today” problem, not a problem of the future, it is only accumulating. People need to be aware now.

[Discussion Leader]: On the 60 year idea. It seems like a long time but could be sped up by digging faster with a bigger shovel. That is not true. Even going as fast as you possibly can, the time it takes to find a location, to test, and so on, even going as fast as you can, it’s a 60 year proposition to get this underway.

K-2A That’s under current technology. The technology world has sped up quite quickly. There will be more technology change in the next 20 years then there has been in human history. In 60 years, things could change.

K-5A Social aspect, there are social networks out there in order to reach people, such as Facebook. There are sites that reach mass numbers of people that could give information and input. There are active groups in universities that could spread knowledge.

K-3A Community events could give everyone a little bit of fun but teach them at the same time.

K-6A Certainly if you want to get “buy ins”, get people to agree to it. You have to have acceptable science and technology as well as ethical acceptance, especially in situations where there are preconceived notions.

K-12A The question is whether people will take it seriously at all. Before the isotope issue we never knew a thing about Chalk River. It only became an issue when someone said it was.

K-1A The APM approach is to get Canadians involved and informed as well as get their input so the NWMO can digest what the general public are thinking about. The human race today is coming down to the fact of cost. If it isn’t in front of them they don’t care.

[Discussion Leader]: We have a brand new organization trying to figure out what they are doing here and doing a good job. They are changing from a study organization to an

implementation organization. One of the things important to them is to be perceived to have credibility and the trust of Canadians. They are asking how they need to behave as they build their organization to be trusted. We discussed transparency last time, I was wondering if you have any questions about trusting the NWMO. After the Chalk River incident it most likely made your trust waver. Is there any advice you can give to the NWMO to be perceived as a trusted organization?

K-16A Not really sure.

K-4A I think the general public and school system, education, are essential. If you went into schools and tried to talk about this, 95% of kids probably would not know what the heck we were talking about and think it has nothing to do with them. It's very important that young people understand. The youth need to be educated about this. It has to be in the system.

K-5A As an organization they need a brand and name recognition before there is a problem. Commercials, public service announcements, print media, public relation opportunities.

[Discussion Leader]: Would you agree with me if I said you can't trust someone you have never met?

K-5A Yes! You need to establish a relationship before any problems can be solved with any sort of trust or faith. They need community partnerships. They need a base of support from provincial and federal government. They need someone to help make partnership with Canadians and not just focus groups. They need interactive mall displays, something people can sink their teeth into.

K-11A I agree the key is education but they have a perfect way to connect with Canadians they are working for. They can work with NWMO to promote what the message is and educate Canadians. This is not something they can just do on their own as it is not just their problem. Using energy organizations would be their best way to spread awareness and create a relationship. In regards to consulting Canadians, I did not know about any of this information before the groups and Chalk River. This is a perfect example of how to educate Canadians.

K-2A You put your finger on it – if you don't know someone, you can't trust them. We don't know anyone from the NWMO. They are going to remain anonymous until

something happens. In respect to the head of the agency, I would get someone well known and respected to head the agency. If you have someone above the fray of everyday dealings it would make it hard for anyone to lay a finger on them. The unknown people can do the work, but for flexibility, it must come from a well known head. The experts should work under him as deputies.

K-1A For the NWMO, the media will do to you and your organization what they want. The media feels that they represent Canada. The face your organization gives to the world is through the media. You need to sell your organization. You need to get the president of the NWMO out there. Your marketing represents the organization, and that has to be tight and streamlined.

K-11A Scientists are not necessarily good communicators. The head of this organization doesn't need to be the public face of this organization.

Parking Lot Questions and Answers Discussion

[Discussion Leader]: Any questions? Did they do a good job? Bad job?

K-15A I think they did a good job.

K-12A One of my questions is question 24. Not the greatest answer.

K-17A You build a hole, seal it up and bury it, let's be honest, nothing is going to happen for over 2 million years and by then, the nuclear radioactivity will be gone.

K-6A I was surprised at how poorly they answered these questions, it's like a politicians answered them. Question 1 doesn't answer the question. Don't tell us you are undecided. Question 11 just discusses the process but gives no time period. Question 25 says nothing can go wrong. It doesn't say at all what will go wrong! If they don't know what they're criterion are yet, just tell us that!

K-13A Question 16, how is the "Average Joe" going to find information? They aren't going to know this telephone number, how will it be found?

K-5A Question 23 they talk about involving schools. I would like to know who is developing the curriculum. Bad curriculum is just a waste of money.

K-2A This is not very transparent. Most of the answers are okay, but there is nothing important there. Question 1 and question 25 are critical and they are answered worst than politicians. What is the anticipated criteria for host community's storage? That's one that everyone wants to know and they don't give you a straight answer. They should just say "we don't know." They speak in vague generalities. They don't tell you that they don't know. If they want to start out by being credible, they can't answer question like this. Look at question 25! They don't answer the question.

[Discussion Leader]: Is saying they don't have an answer a better answer?

Panel consensus that yes, that is a better answer.

K-11A Most were pretty good but maybe they need some scientists to help answer the questions.

K-1A Question 14, who is paying the bills, the answer for that relates to the discussion we had about recycling. These organizations are paying for the storage, they are paying for the research.

K-5A It doesn't say who answers the questions. Like what branch of the NWMO.

K-13A All provinces should have information on this, not just the four involved.

K-8A The worst thing they could do is skirt the issues and speak like politicians. Question 30 doesn't answer the question.

K-12A Question 22 seems like they were answered in haste and not properly. They went grey almost immediately on important questions.

K-6A Question 34 has a terrible answer.

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

The Phase Two Parking Lot question from a Kingston Panelist was the following:

- Does the NWMO have a marketing/public outreach department?

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

<p>Concept</p>	<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.
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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.

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