

Understanding the Choices – The Future Management of Canada’s Used Nuclear Fuel

NWMO Information Sessions Final Summary Report

**Wednesday, November 24 and Thursday, November 25, 2004
Best Western Lakeside Inn and Conference Centre
Kenora, Ontario**

1.0 PARTICIPANTS

Three information sessions were held over two days in Kenora; in total, thirty participants attended the sessions.

The NWMO representative was Pat Patton, the assessment team member was Michael Ben-Eli, and Laurie Bruce and Sarita Swamy were present from DPRA Canada.

The following is a summary of comments from the information sessions in Kenora.

2.0 MANAGEMENT APPROACHES

What are the strengths and limitations of each Management Approach?

2.1 Storage at Reactor Sites

2.1.1 Strengths

- This option doesn’t require transportation
- It would be easier to look after the waste if it’s on top of the ground.

2.1.2 Limitations

- The generating sites were not selected with long-term storage of waste as a siting requirement.
- Site storage will be safe over the long-term.

2.1.3 Other Comments on Storage at Reactor Sites

- One participant expressed concern and asked whether reactor sites were planned carefully in order to be kept up-to-date, as some reactors have been “moth-balled” or refurbished.
- A few participants raised questions regarding storage canisters: Would there be some other containment in the sub-containment option? Would replacement of canisters every 300 years be part of the above ground option? What’s the difference of burying the canister versus putting it in a canister and leaving it above ground? Is there a time frame attached to the capacity of the storage container?

- Can the results from the research on waste management at Chalk River and Whiteshell be applied, and why aren't we looking at those sites for storage?
- Put it above ground and those in the reactor community can relocate if they wish to.

2.2 Deep Geological Disposal

2.2.1 Strengths

- One participant felt that the deeper the storage containment, the better.
- One participant's sentiment was that burying the waste products would be a lot safer than leaving it above ground.

2.2.2 Limitations

- Some participants raised concerns relating to leakage. These were: rock can form fissures, and therefore is prone to leakage; breaks and cracks could happen in 1000 years; if via leakage water can get down, it can come up – radioactive water would be a concern; all kinds of stored waste have leaked – you're relying on a technology you do not fully understand – that's a concern.
- There should be the option of retrievability.
- It is not feasible to develop the necessary infrastructure for millennia.
- A few concerns were raised regarding geologic changes i.e. geothermal heating, earthquakes occurring, and the uncertainties surrounding these events.

2.2.3 Other Comments on Deep Geological Disposal

- The natural environment surrounding the Athabasca area supposedly contains the highest level of radioactive material and is supposed to be a very stable geographical area.
- A few participants raised questions regarding depth of storage containment and drilling i.e. if large bore holes will be drilled; if test holes have been drilled; how deep would containment be, and how to monitor the waste at such a depth.
- A few questions were raised on studies undertaken: whether studies were done on the Canadian Shield; and if studies have recommended any options for where a waste management facility may be established.
- On deep geological disposal siting, the following comments were raised: how to study [the geologic medium] before siting; have people thought about if we go with deep geologic, how do we go about finding a site; and how high in the priority list is the Kenora geographic area?
- What about ground water security of storage below ground?
- I can't see any way to go but to put it underground, and stop producing nuclear waste.
- There is a history of technical experts saying that technology will work. Often this was proven to be untrue.
- If current waste is put in the ground permanently, what will happen to the on-going generation of waste?

2.3 Centralized Storage

2.3.1 Strengths

- A few participants were comfortable with transporting the nuclear waste to a secure centralized site. One participant was confident that the transport of waste would be handled in a very professional manner.

2.3.2 Limitations

- A drawback of having a centralized facility is that it will be located near a small population.

- A spill has happened in the U.S before – it can happen here.
- When you talk about putting it in one central location, and if something goes wrong, what's to say you couldn't have Chernobyl? What's to say it won't explode?
- Wouldn't it be a concern if leakage happened at the site?

2.3.3 Other Comments on Centralized Storage

- Hasn't AECL transported nuclear waste through here already?
- A number of years ago, there was a discussion about transporting nuclear waste. There was a similar public process. People were concerned about transporting the waste through Kenora.

3.0 ASSESSMENT FRAMEWORK

Is the assessment framework comprehensive and balanced? Are there gaps, and if so, what do we need to add?

General comments and questions about the framework included the following:

- What weight do the discussion sessions have?
- Comments relating to community well-being were: the environmental justice aspect in relation to rural communities was noted as an important concern; in the past there has been a sentiment that in the north, no one is living here, and therefore the waste can go there, but it is someone's home; Did the Finnish communities that agreed to site the waste in their community do so for economic reasons?; I can't imagine a community asking to be next to a nuclear waste facility;
- One participant felt that nuclear waste should be retrievable regardless of the management approach chosen, thereby allowing for the possibility of future science to deal with the waste in a more appropriate manner.
- From a scientific basis in terms of pre-testing and post-testing, we're very much at the pre-test stage, who's going to do the post-test? It's very fundamental research.
- As a generation, we haven't been good stewards of the environment. Are we really going to make conscious, informed decisions? How do we ensure the safety of future generations?
- Many people think of the North as the soul of Canada, and they think that burying it here is a violation.
- As an unnatural material, nature would not be able to adapt to nuclear waste.
- Questions raised relating to weighting and values were: everyone is making suppositions based on value, but we really don't know; is there a weighting factor on a value basis; can you argue what has more value, depending on where you're coming from?
- A couple of participants raised comments relating to uncertainty: whether past decisions have included an element of uncertainty; placing the waste underground carries uncertainty.
- Doesn't it also depend on how you ask the question?

4.0 IMPLEMENTATION PLAN

**Are there specific elements that you feel must be built into an implementation plan?
What are your thoughts on what a phased approach must include?**

General comments and questions about the implementation plan included the following:

- What's the timeline for this study and for the recommendation?

- If you look at cultural change, change is going to happen exponentially. So to think we're going to have the necessary societal structure in place is "iffy" at best.
- We don't know what positive changes may take place in the future to deal with this waste i.e. shooting it into space.
- Who is going to own the land? How are you going to get everyone to buy in to a site for the waste?
- It's the monitoring of rules and regulations that concerns me. How effectively is it going to be done and who would be monitoring?
- I would assume that in the nuclear energy industry that this [monitoring] system is in place.

5.0 Additional Comments on Discussion Document 2

No general comments were made on the contents of Discussion Document 2.

6.0 Other Comments

Other comments that were received by participants at the information sessions in Kenora, which were not directly related to Discussion Document 2, have been grouped under thematic headings and are summarized below.

International Issues

- Comments/Questions relating to Canada's position regarding nuclear waste were: I see Canada as a peaceful nation. This is one of the areas where we can be a leader – of how to stop the proliferation and production of nuclear waste; are we rated last in the world in terms of dealing with nuclear waste; and, who is #1 in terms of storing nuclear waste?
- Comments/Questions relating to what other countries are engaged in were: What are other countries doing; is France reprocessing and sending back to Japan; what countries are reprocessing; for countries that are sold reactors, are they looking at granite to bury it in?
- Questions relating to the sale of fuel bundles were: did Canada sell to North Korea? Is it correct that Canada has sold a bunch of reactors around the world?
- There is a site in Africa where there is a nuclear reaction happening all the time, but there is some weird looking vegetation there. Has anyone looked into why it's naturally occurring?

Energy and Alternative Technologies

- Comments relating to energy conservation were: have there been any studies done in terms of how to reduce electricity usage; I think we need to continue to raise consciousness and find safe solutions. Who's the biggest consumer of energy in Canada; we need to feel more pressured at an individual level to cut down our energy usage; most Canadians have this point of view – to reduce our energy consumption, so what is holding the government back?
- Comments relating to wind, water and solar power were: we could be looking into other alternative energies such as wind, solar; if we would have spent as much money on Hydro, wind, or other sources, we wouldn't be in this situation; Why don't we tie into Manitoba and Quebec's grid? Both have high potential. I'd sooner go with renewable waterpower than nuclear.
- Comments related to energy policy were: it's not the fault of this process, but clearly [future energy policy] is important; I know energy is one big focus of the government; Where do the two processes interlink – energy policy and nuclear waste management;

you are just dealing with nuclear waste, so you're not looking at energy policy; we're pretty worried about greenhouse gases, but it's pretty miniscule when you look at the history of the earth. Are we exaggerating green house gases? Government is quick to get rid of generating plants and switch to nuclear energy when we don't have a plan. I don't know if that's the way to go; is the plan for nuclear to make up the shortfall for the coal-fired plants?

- In regard to the notion of public health and safety and prevention, if we know it's toxic (nuclear waste) for 1000 of years, and we don't know what to do with the waste, why do we continue to support nuclear energy? Perhaps our money and focus should be spent on alternative sources. I'd like to see more effort put towards conservation.
- You're saying the price of electricity will go up. But there are other solutions.
- The cost of energy will increase.
- What about sending it into space?
- The minority is ruling; it is not for the majority
- It all comes down to money.
- We do a lot of research in Canada. But we always seem to take research up to a certain level, and then drop it.

The Nuclear Waste Management Organization and Public Engagement

- Why did you come to Kenora?
- I've tried to get more information by viewing the website, but it takes time to load.
- The consultation process is not necessarily a positive thing.
- Are the discussions taking place all across Canada?
- Will your recommendation be binding on the government?
- Just out of interest, I don't see any Kenora councillors. I'm wondering if you're running into that at your other sessions?
- For this consultation process, is it interpreted that because of the low turn out, there is a lack of interest?
- Is your group unanimous on what is the best management approach?
- Are you going to do more advertising?
- We have to do a better job promoting these events, and this is not a criticism.
- When you say Natural Resources, are you talking about the federal department?
- We're missing the public education part. Shouldn't we be doing this first?
- When are you coming back?
- So what is the consensus of Canadians? What are Canadians saying about the different storage options?
- Questions relating to the NWMO: who do you represent; who pays you; you're employed by the waste generators; is the NWMO basically collecting information; are you deemed to be society's conscience?
- I feel that the government sets up advisory committees to avoid dealing with an issue.
- Most people don't come out because they feel government does not listen to them already.

Nuclear Energy and Used Nuclear Fuel

- How big is a bundle?
- What is at Pinawa?
- Is the waste at Whiteshell?
- For the ideas put forth, have they looked at burying the waste in clay?
- What potential of the rock (uranium) is used?

- We've missed the boat in Canada on this nuclear issue. We should have been selling more reactors around the world, and then we can ship it here and treat it.
- For some reason, I thought there were barrels and barrels of the waste. I saw on the [web]site that it [the waste] could fill a hockey rink.
- We have the best type of uranium, natural uranium. But the government was so fearful of reprocessing. They made a lot of wrong decisions.
- It depends on who manages it (in response to a question of choice: managing nuclear waste at the surface, or burying and monitoring it).
- Where is it stored now?
- Canada does not reprocess their bundles?
- Who would want to recover this stuff [nuclear waste]? It's cheaper to mine this stuff.
- It might be helpful to know more about the fuel rods when they are in their disposal condition.
- The price of energy in the world is going to skyrocket. Nuclear energy is cheap. What are the options? You get more energy from nuclear compared to other forms of energy.
- How many fuel bundles are produced a year?
- How long have we relied on nuclear power?
- What percentage of Ontario electricity is generated by nuclear power?
- Can't they use the waste for anything?
- Are the CANDU reactors sold?
- When you store fuel bundles, you're storing everything including the most radioactive part?
- How long is the half-life?
- How many fuel bundles are at Whiteshell?
- Have you looked at the mines as a storage site? I haven't seen one that hasn't flooded.
- A remote area would be better. If there were repercussions, it would have less impact on people.
- We're into a different societal era with respect to terrorist threats.
- You need only one disaster. One is one too many.
- There is no research to say how safe the waste will be once buried.
- Comments/questions relating to plutonium were: how many bundles would it take to develop a plutonium bomb; if someone gets their hands on this stuff, is there enough plutonium to make bombs?
- The CANDU reactor is one of the safest in the world.
- Is there the potential for weapon production?
- I lived during Canada's only nuclear meltdown in Deep River and things went bad and there is still fallout from that. It was a breakdown of communication.
- If one canister leaks, does it offset the others?
- What if something crashed into a [nuclear] site, what impact would it have?
- Aren't all these proposed storage options a threat to everyone's safety?
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Siting

- A comment was made regarding a study conducted 5 years ago in search of shafts for diamond deposits. The participant wondered whether the information had been passed on to the NWMO, and whether that study has anything to do with this process in terms of finding an area.
- Have you considered burying the used fuel in clay?
- With Chalk River and Whiteshell, are the results from those experiments being applied here? Why aren't we looking at those sites since they already exist?
- Has a decision been made where it [storage facility] is going to be built? Is there an on-going effort to find a site?
- How high on the priority list is this [Canadian Shield] geographic area?
- I have a problem with putting it in the ground. A similar example is putting sewage in the lake and forgetting about it.
- When do you hope to decide? Are you going to have a site?
- Once you get to the siting stage, would it matter if a community wants it there or not?
- It seems that above ground is the best for monitoring and retrieving the waste.

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