

Choosing a Way Forward

**The Future Management
of Canada's
Nuclear Fuel**

My Response

Don Olson

To

**Nuclear Waste Management Organization
49 Jackes Avenue, First Floor
Toronto, ON
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NWMO'S Recommendation:

The recommendation for 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:

1. Centralized containment and isolation of the used fuel in a deep geologic repository in suitable rock formations.
2. Flexibility – allowing for continuous learning, research and development.
3. Provision of an interim step – (during 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.
4. Continuous monitoring.
5. Potential for retrievability of the used fuel.

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

1. Meet or exceed all regulatory standards and requirements for protecting health, safety and security of humans and the environment.
 2. Provide financial surety.
 3. Seek a willing community to host the central facilities.
 4. Focus site selection on those provinces that are directly involved in the nuclear fuel cycle.
 5. Engage people and communities throughout.
 6. Be responsive to advances in technology.
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My Response:

The draft report *Choosing a Way Forward* is excellent and extremely thorough, and is a tremendous reflection of the 3 years of research and the wide consultation process with the Canadian people. I enjoyed reading it immensely.

My initial submission to the NWMO last year “was for disposal of the used nuclear fuel back underground from whence it came” I believe still warrants further investigation: it could potentially be adapted to your recommendation of **Adaptive Phased Management**; and it already is part of the nuclear fuel cycle (psychologically it should be an easier sell to the host economic region, i.e. all we are doing is “completing the nuclear cycle from beginning to end” – this is where it started and this is where it ends). It shows that we are responsible for our own actions as a Province.

Nothing is always just black or white, and compromise (or blend of ideas) is usually the end result. **Adaptive Phased Management** is a compromise recommendation and as such may be seen and understood by Canadians as not decisive enough, and many may view it as a cop-out. Initially that was my reaction, but after reading your draft report, I have softened my view mainly due to one statement in the report found on page 15 under Phase 1: with the construction of the underground research laboratory leading to future advanced knowledge of science and technology you may find that you can bypass the shallow underground storage facility altogether and proceed to deep geologic repository. If this is the case, then the used fuel can still be stored at the reactor sites until ready for transport to the central site, eliminating a major step with a major cost factor involved. If the research carried out in the underground laboratory finds that a shallow underground storage facility is required, then construction can still take place. It's flexible and understandable.

The big problem that we have to accommodate with nuclear waste is **time** – hundred's of thousands of years into the future. I think it is ludicrous if we look at this issue through present day eyes. Canada is only 138 years old, and the way things are going, we will be lucky to be here for another 138 years. The history of civilization teaches us that countries end and political systems change continuously, the need for decisive action is now.

I would like to draw your attention to Appendix 3 / Adaptive Phased Management Technical Description, page 258:

The Cigar Lake mine in northern Saskatchewan is an excellent example. The high grade uranium ore body is currently mined to produce nuclear fuel. The diagram of the cutaway view depicting the ore body is located slightly above the basement rock formation. The basement rock formation is at a depth of 400 meters below surface.

The underground research laboratory is planned to be constructed at a nominal depth between 500 to 1000 meters below surface, depending on suitable rock formation characteristics. Locating the underground research laboratory and deep geologic repository below the actual ore body (which will have been mined out for years by the time this work is done) by several hundred meters would be an excellent idea and recommendation that I would like to put forward for your information and possible incorporation in your Final Report to the Government of Canada. Bear in mind that Cigar Lake is just an example, there may be more suitable mined out uranium ore bodies located above better basement rock that would be more suitable for a deep geologic repository, and this would be determined in your site selection process.

I agree that your objective of **fairness** would best be achieved if the siting processes were focused in the economic regions in the provinces associated with the nuclear fuel cycle. Referring to Table 4-9 on page 162 the NWMO proposes for possible implementation of **Option 4: Adaptive Phased Management** 3 provinces to be considered – Ontario, Quebec or Saskatchewan. Saskatchewan is where the nuclear fuel cycle started, and this is where it should end. Northern Saskatchewan, economic region 760 is where it all started; a beautiful region but extremely sparse, offering excellent opportunities for a possible site for hosting the central facilities.

My Recommendation:

I support **Option 4: Adaptive Phased Management** as described in your draft report *Choosing a Way Forward* and make the following recommendation that the central site facilities and deep geologic repository be constructed in northern Saskatchewan, economic region 760 and to be located beneath an old mined out uranium ore body, if possible.