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Monday, August 29, 2005

Ms. Elizabeth Dowdeswell
Nuclear Waste Management Organization
49 Jackes Avenue First Floor
Toronto Ontario Canada M4T 1E2

Re: Choosing a Way Forward

Dear Ms. Dowdeswell,

Thank you very much for your letter of May 18, 2005, and the copy of the draft study report, "Choosing a Way Forward: The Future Management of Canada's Used Nuclear Fuel". Your explanation of the way the issues I raised were incorporated into the study, or precluded from extensive consideration by your initial mandate, is appreciated.

My commentary on the preceding report from NWMO, "Understanding the Choices" indicated that I was becoming "hopeful the NWMO will be able to recommend a way forward with used nuclear fuel". The draft copy of "Choosing the Way Forward" leaves me confident that NWMO will achieve that objective. I find there are some issues the report authors have not fully appreciated. They do recognize that that there is still much to learn. That is accommodated by their strong recommendation of the "adaptive" management approach emphasized by the Option 4 plan. That approach should be very effective in allowing new information to be factored into the use and management of spent fuel and true "wastes" which might remain from the nuclear fuel cycle.

The report authors are still conflicted with respect to time scales and priority of consideration of benefits and risks. They seemingly attach very high priority to the protection of humans, other "sentient creatures" and the environment over an extremely long time period up to a million years. I believe the traditional knowledge of our aboriginal peoples, and the similar innate wisdom of other Canadians, establishes that priority be given to people now living with reduced priority for detailed consideration of hypothetical far future generations.

The author's conflict over priority and time scales is brought particularly painfully to light when they do go beyond the NWMO mandate to look at the potential for reusing and recycling used nuclear fuel. A short section on Page 130 in bold type concludes that;

"**For a number of reasons, reprocessing as a management approach for used nuclear fuel is considered to be highly unlikely as a viable option for Canada at this time. The necessary facilities are very expensive and inevitably produce residual radioactive wastes that are more difficult to manage than used nuclear fuel in its un-reprocessed form. Reprocessing also requires a commitment to an expanded and multi-generational nuclear fuel cycle, and it potentially separates out weapons-grade material (plutonium) in the course of the process. The abundant reserves of natural uranium in Canada suggest that it is unlikely that Canada will implement reprocessing in the near future. Canada is a leader in uranium mining and Canadian uranium reserves are far from being depleted. The cost of reprocessing is quite high and is not about to be exceeded in the near future by the cost of mined natural uranium."**

The quoted paragraph implies complacency with respect to world energy supply. Perhaps the authors are not aware that many are concerned oil supplies will have dwindled severely in the "near future" of 175 years defined in "Choosing the Way Forward". Perhaps they are not aware that Canada supplies the world with most of the natural uranium she produces and will continue to do so in response to demand. There is a very real chance that the additional energy which can be extracted from used fuel will be needed in the practical "near term" established by the seven generation look ahead so often referenced in the report. I appreciate that the adaptive management approach the team is recommending, over the time scales suggested for implementation, takes the potential for such changes into account.

The report often refers to used fuel as waste. As you acknowledge, many of us have pointed out that it could be considered an energy resource for future generations. It is interesting to speculate on the potential value of that resource. The design of the example facility is based on storing 3.7 million fuel bundles each containing 19 kg of uranium. The completed facility will thus store about 155 million pounds of uranium. It could be processed by breeding technology to extract more that one hundred times the energy taken from it during its first pass through CANDU reactors. It could be literally worth its weight in gold a few generations hence. At $500/ounce that totals about one trillion dollars. The total cost of the facility NWMO is considering to keep this resource securely and safely fades to insignificance in that context. That, and the basic knowledge to exploit its energy content, is a substantial legacy to pass to future generations.

I am satisfied that the issues I raised have been considered. On reviewing them, I propose the following for continuing consideration as NWMO moves forward to and beyond the deadline for delivery of "Choosing the Way Forward".

- Continue to develop the consideration of the benefits of nuclear energy that is already evident in the report as the facility is adapted to the reality of future energy needs.

- Develop deeper appreciation of the aboriginal wisdom embodied in the seven generation forward thinking principal. Respect it's consistency with the values of all Canadians. It provides a realistic division point for consideration of priorities with respect to "intergenerational issues". The draft report seems to be still seeking understanding of the principal with its excessive and near obsequious repetition of the phrases "aboriginal", "traditional knowledge", "aboriginal knowledge", etc.

- Maintain a balanced appreciation of Canadian values through observation of what Canadians actually do. What they say in response to leading presentations and questions about the extreme long term future at a short meeting is unlikely to reflect innate or considered values.

In closing, I believe that the proposed "Adaptive Phased Management" approach your team is developing is the appropriate way forward. There are details of the example plan embodied in Option 4 which are being questioned. Your team clearly acknowledges that plan changes will be needed as time goes on and new knowledge and needs develop. I'm looking forward to additional refinement of the concept in November.

Sincerely,

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Principal Scientist

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