A Crtique of Documents Issued by the Nuclear Waste Management Organization

Two documents have been issued recently by the NWMO, namely, Assessing the Options (ATO), June 2004, and Choosing A Way Forward, May 2005.

These two documents are seriously flawed. One reason is the underlying assumptions of the Proposal, and the second is the many omissions of facts and interrelated scientific discoveries connected with the nuclear industry.

1.Assumptions

In the second document, CAWF, it states that "scientific and technical experts cannot predict with complete certainty how any management approach will perform over the many thousands of years required to contain and manage potential releases...." (p.44)

It also states: "The radiotoxicity analysis for used CANDU fuel suggests that this material is a potential internal exposure health risk for more than one million years. (CAWF p. 242)

The logical response would be to stop producing such waste in the first place. It is foolhardy to wait until 1.7 million fuel bundles have already been created before sorting alternatives for disposal. After some 60 years the scientists of the world have not developed a satisfactory and demonstrated method of dealing with such dangerous substances.

Unfortunately, the basic assumption of the two documents is that nuclear power will proceed indefinitely. The early parts of the documents are fairly diplomatic in tone, but in the later sections they are blatantly blunt: "For the continuing CANDU nuclear program scenarios, nuclear generation is assumed to remain constant at 22,500 MW for an additional 200 years, or roughly 3 times the current projected life of 70 years for commercial nuclear power production in Canada....
The used fuel inventory for the continuing CANDU nuclear program scenario is approximately 30 million bundles, two million as of 2005 and an additional 28 million by about 2200." (CAWF, p. 292).

The moral, ethical, technical, and socially acceptable factors of the larger and pressing questions are set aside for the subsidiary matter of the storage of nuclear waste. (CAWF, p. 20)

Following the biased mandate of the Federal Government legislation, the NWMO is to sort the alternatives of : deep geological disposal in the Canadian Shield; storage at nuclear reactor sites; and at a centralized storage.(ATO,p7) Then the second document came up with a fourth alternative termed "Adaptive Phased Management." This is basically the same three alternatives, spaced out over given stages and given a fancy name. (CAWF, p. 10)

Having spent $17 billion of taxpayers money in providing subsidies for the support and promotion of nuclear power, the Federal Government cannot bear the idea of phasing down this dangerous industry.

The two reports contain a lot of smokescreen, camouflage, and non-sequitars. For instance, ATO,(p.7) states: "The team also took into consideration the relevance of some other proposed options to its assigned task." However, it never says what the options were; it gives no space to a discussion of these other options; it gives no allowance for options that may have been offered by public citizens. (See also CAWF, p. 258)

The federal government and the nuclear industry long ago decided on deep rock depository as a means of dealing with high level nuclear waste. First the AECL was commissioned to prepare a plan for deep burial in granite rock. AECL spent 20 years and $700 million dollars developing the plan.[1] There were questions and uncertainties about the plan, so the federal Government commissioned the Seaborn Panel to review the issue. It spent 8 years and $8 million dollars and came up with a negative recommendation. Among its recommendations were:

- From a technical perspective, the safety of the AECL concept has been on balance adequately demonstrated for a conceptual stage of development. But from a social perspective, it has not. (Italics mine)
- As it stands, the AECL concept for deep geological disposal has not been demonstrated to have broad public support. The concept in its current form does not have the required level of acceptability to be adopted as Canada's approach to managing nuclear fuel wastes. (Italics mine)
- That a Nuclear Waste Management Agency, as described in Chapter 6 be established quickly, at arms' length from the utilities and AECL....(Italics mine) [2]

One of the members of the Seaborn Panel was incensed by the Response of the Government of Canada to the Panel report on Dec. 3, 1998. "The response of the Government to our report was a profound disappointment to me, a betrayal of the work the panel had done over eight years, and a scandal because the response made the report say what it did not say." (Italics mine) [3]

That member takes several pages to show how the Government Response twisted and misrepresented the Panel's recommendations: "I wish to say publicly that the government's response to the panel's findings does not reflect the nuances we wrote into that report. We did not say simply that the concept was technically safe. Our carefully crafted words reflected a more sophisticated approach that highlighted the fact that there is a point of view that believes the concept is not safe, and this is an important part of what I am saying....The panel

broadened the meaning of safety beyond the traditional meaning of technical safety and emphasized the experience and historical memory of people in assessing the concept from a social safety perspective." (Italics mine) [4]

The Panel member adds, "Skepticism is expressed about the validity of computer modeling as a way of predicting events thousands of years into the future, ...Above all, there is no precedent anywhere in the world to demonstrate that deep geological disposal is indeed safe, ..." [5]

The federal government ignored and contravened the Seaborn recommendations. It seized on the phrase, "the polluter pays," (CAWF p.24) and passed legislation giving this whole tangled and complex issue to the joint waste producers as the Nuclear Waste Management Organization. It charged the NWMO to make a recommendation to the Government by November 15, 2005. This was like putting the fox in charge of the chicken house!

An article in the Ottawa Citizen ,(Feb.1999) suggested that the arms-length option was rejected because a federal agency would incur liability for the Federal Government. Hence, it used this method to avoid accountability.

Whatever the final recommendations, the federal Government will do what it wants to do, whether or not it favours the NWMO recommendation. It has rejected Panel recommendations in the past. The NWMO is working diligently to produce the proposal which the Government wants to hear.

Already consultations are being held with aboriginal bands, and the travel expenses of aboriginal members are being paid for in northern Saskatchewan. For those bands which might accept a deep repository on their lands, offers of large payments and long term employment are being made. The "fishing expeditions" are already underway, before any official recommendation is tabled. This simply exacerbates the cynicism of the public.

Omissions

The two reports omit so many important factors that it results in a skewed and distorted presentation. For instance, the Reports:

--omit the fact of pressurized groundwater under the Canadian Shield Rock, and the dangers of fracturing rock with blasting, drilling and tunneling.
--omit the recommendations of the Seaborn Panel Report.
--omit the advice of the Scientific Review Panel that 95 deficiencies need to be addressed before the rock depository was undertaken.
--omit the care of 200 million tons of radioactive tailings from the mining and milling process.
--omit the care for nuclear wastes from refurbishing reactors or the demolition wastes from decommissioning projects.

--omit the many serious dangers of transporting high level nuclear wastes to central sites, or the site of a deep repository (giving only brief references.)
--omit consideration of the link between management of used fuel and the reprocessing of the fuel to recover plutonium.
--omit the costs of refurbishing old reactors.
--omit the dangers of alpha radiation for human health and its effects on the biota.
--omit the dangers of uranium exports to countries manufacturing depleted uranium ammunition and nuclear weapons.
--omit any discussion or consideration of the advantages of alternative sources of generating electricity.
--omit the recent pronouncement of the BEIR Panel (Biological Effects of Ionizing Radiation) under the National Academy of Science, that there is no safe threshold for radiation exposure. (June 2005)

The authors of CAWF demonstrate selective inattention. They ignore the findings of the two geologists, Fritz and Frappe, away back in 1987. Many people have a mental image of granite rock as hard and solid, impervious to the various forces of nature. This image and basic myth was shattered by the research of Fritz and Frappe, the image which NWMO accentuates and builds upon.

P. Fritz and S.K. Frappe carried out rigorous research on the deep rock mines across Canada at Yellowknife, Beaverlodge, Thompson, Sudbury, and Matagami. All of them were plagued by flooding of water and needed continual pumping. They found extensive salt water, under high pressure, under the rock of the Canadian Shield. In their publications they included similar findings by scientists in Sweden, England, Finland, Czechoslovakia, Switzerland, and Eastern Europe concerning granite rock. From this research they concluded:

> "Crystalline rocks are often perceived as being impervious and non-reactive, i.e. suitable for permanent containment of toxic or radioactive waste. However, hydrological and geochemical studies in granite rocks in Sweden, and in the Canadian Shield and, more recently in the Soviet Union, have clearly revealed that such a priori assumptions were not justified. Instead, many deep boreholes drilled as part of mineral exploration projects yielded substantial amount of fluids and gases...: crystalline rock does not present itself as a non-reactive, silent partner in disposal schemes."[6]

Yet, the NWMO has ignored and concealed these findings derived from the realities of mining in the deep rock of Canada. They neglect to mention that the AECL deep rock Whiteshell Laboratory at Pinawa, Manitoba, was constantly plagued by water seepage and needed continuous pumping. Yet, it persists in building its whole complex plan on this myth of Canadian Shield rock. In the

document, Assessing Options (p. 43), it blithely states: "It is assumed that the repository would be located in the Canadian Shield at a depth of 1000 meters." In spite of the experience at the Pinawa deep rock laboratory, the writers propose another underground laboratory in the future."(CAWF, p. 252)

In the document, CAWF (p.44), the writers state: "No management approach should preclude consideration of new information, and any strategy must allow for a change in approach if any new information means that the used fuel can be better managed." Yet the writers do nothing to change their approach, despite the data from the deep rock mines, plus the saline waters emerging through geological faults in 24 places in the rocks of Ontario in what are termed "salt licks" for animals.

The proposed Repository (CAWF, pp.247-260) is a scaled down, abbreviated version of the original AECL plan. It does not contain enough specifics to arouse the engineering critics as was the case with the Scientific Review Group (1995) and the Seaborn Panel (1998).

The proposal includes a general outline and a few drawings and charts. The authors state: "However, technical uncertainties remain, and further demonstration of the long-term isolation technology is required...we conservatively estimate that it will take up to 30 years of research and demonstration at the underground research laboratory to confirm the suitability of the site....Our research will involve studies of the behaviour of the rock mass and groundwater flow at depth, and potential flow paths and long travel times for contamination that may be released from used fuel containers and repository sealing systems." (CAWF,p.257)

The authors do not have specific and proven data to build upon. They project into the future with generalities that they "will involve studies." They are asking the Government and the public "to buy a pig in a poke."

Dialogue, Divergences, and Generalities

There is much repetition in the CAWF document about "dialogue." In an early section the writers state: "We set aside the traditional notion of consultation as they have too often in the past resulted in one way conversations." (p. 12). Yet, they admit that Aboriginal people do not view many of their meetings as "consultation." (p.49).

In northern Saskatchewan, uranium company representatives go into a community, show a Power Point Presentation with statements, pictures, charts, and comparisons, all done in scientific jargonese. They "snow" the people with unfamiliar lingo and ask if there are any questions!

The authors do admit that in their consultations they have encountered some

"divergent views." In one section of a 300 page Report, they take 8 pages to describe a few of these divergent views.(CAWF, pp.43-51, also 121). However, they do not provide specific facts or data or actual experiments to address the problems raised. They describe some of the issues but then hurry on with the hope that "togetherness" and "frequent contacts" and "more education" will bring people to balanced views and consensus, i.e. agreement with their proposals.

Then, they also use some fancy "dodge tactics." They state: "We report below on some fundamental questions on which we heard the views of Canadian diverge. For the most part, these questions are beyond the mandate of our study." (CAWF,p.41) (Italics mine).

Concerning initial mining of uranium and generation of nuclear power they write: "For these people, the question of whether nuclear generation should continue is Irrelevant to our study." (p.42) Again, they write: "In this report, the NWMO has not examined or made 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." (p. 26)

It is rather strange to find the NWMO counting the number of contacts, meetings, and telephone surveys(?) they have made in order to ensure the wonderful "dialogue" they have carried on, (CAWF, pp.48,267-271), when they do not give specific data or solutions to the pointed questions, problems and "divergences."

The writers and planning teams have picked up a number of "buzz words" from the public, (pp. 26,64, 66, 121, 169) and then repeat these with a plethora of words, generalities, and future probable actions. One is reminded of firefighter using a spray of foam to douse a fire. The foam used by the NWMO is a great multiplicity of words and generalized comments, much repetition, plus a managerial jargon and some fancy charts.

However, not to worry! The implementation of a deep rock depository is to take a long, long time! Most of us will be dead by then. Only our children and grandchildren and great grandchildren will be left to cope with the radioactive and lethal poisons. It is proposed to take from 175 to 300 years (CAWF,pp121,122, 147)

--Siting of central facilities –(about 20 years)
--Design and construction—shallow storage caverns & research laboratory—(about 10 years)
--Transportation to central facility-- (over 30 years)
--Extended monitoring – (out to 300 years)
--Decommissioning and closure—(over about 25 years)
--Post closure monitoring-- (indefinite) (CAWF, p. 292)

Conclusion

These NWMO Reports are seriously flawed. Long ago, in 1958, Michael Polanyi, in his classic book, Personal Knowledge: Towards a Post-Critical Philosophy, warned that for every scientific project you need to check the premises or working assumptions. Different cases can be assembled on different premises. This report is built on the premise that nuclear power generation will continue, and that deep rock depository is the way to handle the long lasting and toxic radioactive wastes (CAWF,p. 292)

The federal government is so deeply invested in subsidizing the nuclear industry that it has decided that this is the way to go. The NWMO is working diligently to provide a study which will enable the decision, and to keep the master happy!.

However, the CAWF Report does not stand up to scrutiny. It does not have the data or proven experimental basis on which to proceed. If the Federal Government makes a decision to proceed on the basis of this Report, and a slightly tailored Final report, it will be the biggest hornswoggle in Canadian history.

Dr. Bill Adamson,

End Notes

1. Globe and Mail, March 9, 1999. Article by Anne McIlroy and F. Anderson.

2 Seaborn Panel Report, Federal Environmental and Review Process: Nuclear Fuel Waste Management and Disposal Concept. February, 1998, pp. 2,3.

3. Dr. Lois Wilson, Nuclear Waste: Exploring the Ethical Dilemmas. Toronto: United Church Publishing House, 2000, p. 124

4 Ibid.,p.124

5 Ibid., p.126

6 Ibid., p.12

7. P. Fritz and S.K. Frappe, Saline Waters and Gases in Crystalline Rocks: Geological Association of Canada, 1987, p.*i*