

The High-Level Radioactive Waste Problem in Canada

~background~

prepared by Gordon Edwards, November 2004

- Canada's first nuclear reactor began operating in 1945.
The production of high-level radioactive waste in Canada had begun.
- Nuclear electricity production began in Canada in 1954.
The production of high-level radioactive waste in Canada was accelerated.
- The first official acknowledgement of the nuclear waste problem came in 1977, with the publication of "The Management of Canada's Nuclear Wastes" (EMR Report EP 77-6, commonly known as the "Hare Report").
By that time there were Canadian nuclear reactors operating or being built in four provinces (Ontario, Manitoba, Quebec, and New Brunswick) and in five other countries (India, Pakistan, Taiwan, South Korea, and Argentina).
- The first independent assessment of the nuclear waste problem came in 1978, with the publication of "A Race Against Time" (commonly known as the "Porter Report" ~ the Ontario Royal Commission on Electric Power Planning.)
One of the Principal Findings of the Porter Report was that it would be wise to stop building any more nuclear reactors until the waste problem has been solved.
- Two months before the Porter Report was released, the Government of Canada signed an agreement with the Government of Ontario to mandate Ontario Hydro and Atomic Energy of Canada Limited to study the feasibility of a geological repository for irradiated fuel deep underground in the rock of the Canadian Shield.
This study took 15 years, cost 700 million dollars, and involved the construction of an Underground Research Laboratory in Manitoba. In self-defence, the Government of Manitoba enacted a law preventing the import of nuclear waste into Manitoba for the purpose of permanent storage or geologic burial
- In 1989 an Environmental Assessment Panel was named to examine the safety and acceptability of the geologic disposal concept advanced by the nuclear industry. This panel (known as the Seaborn Panel) published its final report 10 years later.
The Seaborn Panel was explicitly instructed not to consider the question of whether Canada should stop producing irradiated nuclear fuel by stopping nuclear power. When the foolishness of this restriction was pointed out by politicians and the public, the Government promised to hold parallel public hearings on nuclear power.
- During the Panel's public hearings, Chairman Blair Seaborn repeatedly informed members of the Canadian public that public hearings on nuclear power would be held. When it became clear that the Government had no intention of keeping its promise on this matter, Mr. Seaborn was forced to issue a public apology and to express his own indignation at the manifest lack of good faith on the part of Ottawa.

The Seaborn Panel Process and Conclusions

~background~

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- The Seaborn Panel held public hearings in many locations in Eastern Canada. They also made special efforts to solicit input from aboriginal communities.

- After due deliberation, the Panel concluded in its final report that:

"As it now 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 for managing nuclear waste."

- The Panel did not reject the concept of geologic disposal altogether, but noted that it had failed the test of "public acceptability" and had only earned a mark of 50 percent on the long-term safety of nuclear wastes placed in geologic storage:

"From a technical perspective, 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."

- There has been much discussion over what the Seaborn Panel meant in saying that the "safety of the AECL concept" has not been demonstrated "from a social perspective" but only "from a technical perspective".

The Panel's thinking can be found in Chapter 5 of the Seaborn Report, especially in section 5.2.2. which is entitled "Safety from a Social Perspective". Because of its importance, that section of the Seaborn Report is attached to this summary.

- The Seaborn Panel was unanimous in recommending to the Government of Canada that a Nuclear Fuel Waste Management Agency should be established quickly, "at arm's length from the utilities and AECL".

The Panel specified that "its board of directors ... be representative of key stakeholders", and that the Agency be subject to "multiple oversight mechanisms" including "regular public review, preferably by Parliament."

- Instead, the Chrétien government has set up the Nuclear Waste Management Organization under the control of the nuclear industry, whose board of directors consists solely of those producing the nuclear wastes: Ontario Power Generation, New Brunswick Power Corporation, Hydro-Québec, and AECL (Atomic Energy of Canada Limited).

Moreover, in the law as it is written, the NWMO will communicate its recommendations, in November 2005, directly to the federal cabinet. There is no legal requirement for any kind of public oversight or Parliamentary Review.

Report of the Seaborn Panel on High-Level Nuclear Wastes

verbatim excerpts from the Executive Summary

Criteria for Safety and Acceptability

The Panel examined the criteria by which the safety and acceptability of any concept for long-term waste management should be evaluated (Chapter 4 of this report). In doing so, it came to the following key conclusions.

Key Panel Conclusions:

1. Broad public support is necessary in Canada to ensure the acceptability of a concept for managing nuclear fuel wastes.
2. Safety is a key part, but only one part, of acceptability. Safety must be viewed from two complementary perspectives: technical and social.

On this basis, the Panel defined the safety and acceptability criteria as follows:

To be considered acceptable, a concept for managing nuclear fuel wastes must:

- a. have broad public support;
- b. be safe from both a technical and a social perspective;
- c. have been developed within a sound ethical and social assessment framework;
- d. have the support of Aboriginal people;
- e. be selected after comparison with the risks costs and benefits of other options; and
- f. be advanced by a stable and trustworthy proponent and overseen by a trustworthy regulator.

To be considered safe, a concept for managing nuclear fuel wastes must be judged, on balance, to:

- a. demonstrate robustness in meeting appropriate regulatory requirements;
- b. be based on thorough and participatory scenario analyses;
- c. use realistic data, modelling and natural analogues;
- d. incorporate sound science and good practices;
- e. demonstrate flexibility;
- f. demonstrate that implementation is feasible; and
- g. integrate peer review and international expertise.

Safety and Acceptability of the AECL Concept

After applying these criteria to the AECL disposal concept, the Panel arrived at the key conclusions listed below. The rationale for them, and an elaboration on the technical and social perspectives of safety, are documented in Chapter 5.

Key Panel Conclusions:

3. From a technical perspective, 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.
4. 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 for managing nuclear fuel wastes.

Future Steps

The Panel considered the steps that must be taken to ensure the safe and acceptable long-term management of nuclear fuel wastes in Canada (in Chapter 6 of this report). It arrived at the following key recommendations.

Key Panel Recommendations

A number of additional steps are required to develop an approach for managing nuclear fuel wastes in a way that could achieve broad public support. These include:

- *issuing a policy statement on managing nuclear fuel wastes;*
- *initiating an Aboriginal participation process;*
- *creating a nuclear fuel waste management agency (NFWMA);*
- *conducting a public review of AECB regulatory documents using a more effective consultation process;*
- *developing a comprehensive public participation plan;*
- *developing an ethical and social assessment framework; and*
- *developing and comparing options for managing nuclear fuel wastes.*

Note to reader: This entire text (both pages) is taken verbatim from the Seaborn Panel Report.

Taking into account the views of participants in our public hearings and our own analysis, we have developed the following basic recommendations to governments with respect to a management agency:

- that an NFWMA [Nuclear Fuel Waste Management Agency] as described in Chapter 6 be established quickly, at arm's length from the utilities and AECL, with the sole purpose of managing and co-ordinating the full range of activities relating to the long-term management of nuclear fuel wastes;
- that it be fully funded in all its operations from a segregated fund to which only the producers and owners of nuclear fuel wastes would contribute;
- that its board of directors, appointed by the federal government, be representative of key stakeholders;
- that it have a strong and active advisory council representative of a wide variety of interested parties;
- that its purposes, responsibilities and accountability, particularly in relation to the ownership of the wastes, be clearly and explicitly spelled out, preferably in legislation or in its charter of incorporation; and
- that it be subject to multiple oversight mechanisms, including federal regulatory control with respect
 - to its scientific-technical work and the adequacy of its financial guarantees;
 - to policy direction from the federal government; and
 - to regular public review, preferably by Parliament.

Until the foregoing steps have been completed and broad public acceptance of a nuclear fuel waste management approach has been achieved, the search for a specific site should not proceed.

If the AECL concept is chosen as the most acceptable option after implementation of the steps recommended above, governments should direct the NFWMA, together with Natural Resources Canada and the AECB or its successor, to undertake the following:

- review all the social and technical shortcomings identified by the Scientific Review Group and other review participants;
- establish their priority; and
- generate a plan to address them.

The NFWMA should make this plan publicly available, invite public input, then implement the plan.

from the Seaborn Report, Executive Summary