

CANADA'S POLICY APPROACH TO NUCLEAR FUEL WASTE MANAGEMENT AND DISPOSAL

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ABSTRACT

More than 20 years ago, Canada's nuclear fuel waste management and disposal research and development program was launched. The results of the program were submitted to a federal environmental assessment and review panel. The Panel reported its conclusions and recommendations to the Government of Canada on March 13, 1998. In turn, the government announced its response to the Panel's report on December 3, 1998. The purpose of this paper is to present the on-going development of Canada's policy approach to nuclear fuel waste management and disposal.

HISTORY OF EVENTS

More than 20 years ago, in 1977, the Minister of Energy, Mines and Resources engaged a group of independent experts to provide the government and the public with views on nuclear fuel waste disposal. In their report, the authors considered various waste disposal options and concluded that the burial in geologic formations had the best potential for Canada. In 1978, the Canadian Nuclear Fuel Waste Management Program was launched. The Program involved the cooperative research and development efforts of the federal crown corporation, Atomic Energy of Canada Limited (AECL), as the federal agent, and the provincial utility, Ontario Hydro, as the provincial agent. The development of the nuclear fuel waste disposal concept took place over 20 years at a cost of about \$700 million, mostly funded by the federal government.

In 1988, the Minister of Natural Resources referred AECL's concept for deep geological disposal to the Minister of the Environment for a public review by an independent panel. AECL submitted its Environmental Impact Statement to the Panel in 1994.

In 1996, the Government of Canada established its official Policy Framework for Radioactive Waste, which covers all forms of radioactive waste including nuclear fuel waste, low-level radioactive waste and uranium mine and mill waste:

- 1) The federal government will ensure that radioactive waste disposal is carried out in a safe, environmentally-sound, comprehensive, cost-effective and integrated manner;
- 2) The federal government has the responsibility to develop policy, to regulate, and to oversee producers and owners to ensure that they comply with legal requirements and meet their funding and operational responsibilities; and

- 3) The waste producers and owners are responsible for the funding, organization, management and operation of disposal and other facilities for their wastes.

From March 1996 to March 1997, the Seaborn Panel held public hearings on AECL's concept of geological disposal of nuclear fuel waste deep underground in stable rock of the Canadian Shield. This concept translates to a major undertaking which would cost about \$10 billion over up to 70-100 years. The Panel released its report with conclusions and recommendations to the Government on March 13, 1998:

- 1) The Panel's main conclusion was that although, on balance, the disposal concept was found to be technically safe, it was not demonstrated to have broad public support;
- 2) The Panel's principal recommendation was that a separate arm's-length government agency be created to manage Canada's next nuclear fuel waste management activities which would be fully funded by the producers and owners and subject to multiple federal oversight mechanisms.

Reactions by stakeholders and the public to the Panel's conclusions and recommendations were varied; many were concerned that proceeding effectively with the disposal of nuclear fuel waste had received a severe setback. The Government also noted that the Panel could not confirm whether the public was confident that governments were effectively looking after the citizens' best interest; indeed, this is the main residual challenge of the disposal of nuclear fuel waste, whether for Canada or for other countries. To face this challenge, the Government of Canada considered that more work needed to be carried out by the waste producers and owners, particularly on the social, ethical and economic soundness of proposed option.

THE GOVERNMENT OF CANADA RESPONSE TO THE RECOMMENDATIONS OF THE NUCLEAR FUEL WASTE MANAGEMENT AND DISPOSAL CONCEPT ENVIRONMENTAL ASSESSMENT PANEL

The Government of Canada Response reflected general agreement with many of the Panel's recommendations but diverged significantly from those related to proceeding with nuclear fuel waste management activities at arm's length from the major waste producers and owners. Consistent with the 1996 Radioactive Waste Policy Framework, the Government Response places the onus of responsibility back where it belongs, i.e., with the producers and owners who profit firstly from their operations, produce the waste, and have first-hand knowledge on how to proceed effectively with managing their waste.

This approach also limits unnecessary government intervention and duplication.

Therefore, the Government of Canada expects that waste producers and owners will establish, organise and manage a waste management organisation as a separate legal entity, over which the Government will exercise federal oversight.

A) The Waste Management Organisation

The Government of Canada expects that:

- A-1) The producers and owners of nuclear fuel waste will establish a waste management organization, incorporated as separate legal entity, with a mandate to manage and

coordinate the full range of activities related to the long-term management, including disposal, of nuclear fuel waste. The waste management organisation would:

- have a Board of Directors, with fair representation of producers and owners of nuclear fuel waste;
- have an advisory council, possibly including representative from the public, academia, workers, international experts, environmental and other non-governmental organizations as appropriate; and,
- be comprehensive, i.e., allow for the participation of all producers and owners of nuclear fuel waste.

A-2) The Government also expects that the producers and owners of nuclear fuel waste will establish a fund to fully finance all activities of the waste management organization, including the cost for long-term management, including, disposal, of nuclear fuel waste.

A-3) The waste management organisation will report back to the Government of Canada setting out its preferred overall approach for long-term management, including disposal, of nuclear fuel waste, with justification and including:

- a comprehensive public participation plan;
- a framework to assess ethical and social considerations;
- an Aboriginal environmental participation process;
- practicable long-term waste management options for Canada, including the following: a modified AECL concept for deep geological disposal, for example including the retrievability option; storage at reactor sites; and centralized storage, either above or below ground;
- a comparison of risks, costs and benefits of the options from, e.g, a health, environmental, economic, social, and security/safeguards perspective; and
- future steps.

B) Federal Oversight

The three key policy objectives of the Government of Canada are:

B-1) to establish a dedicated fund to be paid by the producers and owners for financing fully the long-term management, including the disposal, of nuclear fuel waste.

In view of the magnitude of the project in money and over time, i.e., \$10 billion over 70 to 100 years, a conservative financial approach is warranted. Indeed, significant

uncertainties are associated with the conduct of this project, which include, but are not limited to,

- the stability of organisations over decades,
 - future policies of all three levels of governments,
 - federal-provincial jurisdiction issues,
 - new technology advances,
 - a shorter accumulation period due to premature closing of reactors, and
 - development work proving to be more expensive than expected.
- B-2) to establish a reporting relationship between the federal government and the waste management organization, for reviewing progress on a regular basis; and
- B-3) to establish a federal review and approval process to ensure federal oversight and provide access to the funds.

NEXT STEPS IN THE DEVELOPMENT OF CANADA'S APPROACH TO NUCLEAR FUEL WASTE MANAGEMENT AND DISPOSAL

On December 3, 1998, the Government Response was posted on an NRCan website. More than 100 copies of the Government Response were sent out to individuals, interest groups, and public libraries. General public consultations in various cities across the Canada began earlier last month. There will also be a separate consultative process for Aboriginal Groups.

Consultations will be finished by February 28, 1999. So far, most consultations have highlighted and confirmed that one means of ensuring that these policy objectives are met would be through the development of federal legislation, as has been done in most other countries, including the United States. Other options that have been thrown on the table by those heard from so far include:

- 1) legal mechanisms such as contractual agreements, memoranda of understanding or agreement; and,
- 2) voluntary mechanisms such as verbal agreements or inclusion of federal requirements into corporate by-laws.

Good progress is now being made and the Government of Canada wishes to maintain this momentum. There are several reasons why it is important to move ahead, albeit carefully and democratically.

- 1) The Government of Canada, in dealing effectively with this issue, will generate confidence that neither the public nor the environment will be negatively impacted by nuclear fuel waste for present and future generations;
- 3) The will to move ahead demonstrates Government leadership and commitment to dealing effectively with the long-term management of nuclear fuel waste and not leaving this responsibility up to future generations;

- 4) Although the current method of on-site storage of nuclear fuel waste at nuclear generating stations is safe, it is good waste management practice and good business sense to define the long-term waste management practices; and,
- 5) Finally, this is the right time to profit from the current international momentum, cooperation, experience and work in this area, which include research results, protection measures, safety culture principles, regulatory practices and democratic processes.

By this time next year, it is expected that the Government of Canada will have provided policy direction for implementing the necessary mechanisms to ensure that Canada can proceed effectively with its nuclear fuel waste management activities.

Managing Canada's nuclear fuel waste is a significantly large project which will involve billions of dollars and take place over many decades. The Government of Canada will assume its federal oversight responsibilities with the cooperation of the waste producers and owners, leading up to the effective unfolding and completion of nuclear fuel waste management activities that will be in the best interest of both present and future generations of Canadians.