2009

BACKGROUNDER

nwmo

NUCLEAR WASTE MANAGEMENT ORGANIZATION

SOCIÉTÉ DE GESTION DES DÉCHETS NUCLÉAIRES

The Canadian Nuclear Regulatory Framework

Implementation of Adaptive Phased Management (APM) for Canada's used nuclear fuel will be regulated under federal laws and regulations.

The management of used nuclear fuel in Canada is governed by the Government of Canada's policy on nuclear waste, as reflected in the *Nuclear Fuel Waste Act* (*NFWA*). Under this Act, the Nuclear Waste Management Organization (NWMO) has been given the mandate to implement APM, which would involve the licensing, construction, operation and decommissioning of a deep geological repository for used nuclear fuel.

Implementation of APM falls within federal jurisdiction and is regulated under the *Nuclear Safety and Control Act* (*NSCA*) and its associated regulations. Under the *NSCA*, the Canadian Nuclear Safety Commission (CNSC) regulates the safety of nuclear energy and materials in Canada.

This paper presents an overview of Canadian nuclear waste policy, applicable Canadian laws and regulations, and the CNSC licensing process applicable to the implementation of APM. International treaties covering the management of radioactive wastes and nuclear substances that Canada has ratified are also listed.

Nuclear Waste Policy and Legislation

The Government of Canada's *Policy Framework for Radioactive Waste*, released in 1996, sets out the roles of government and nuclear waste producers. Three principles were defined:

- The federal government will ensure that radioactive waste is managed in the long term in a safe, environmentally sound, comprehensive, cost-effective and integrated manner.
- The federal government has the responsibility to develop policy, regulate and oversee owners to ensure that they comply with legal requirements and meet their funding and operational responsibilities in accordance with approved waste disposal plans.
- The waste owners are responsible, in accordance with the principle of "polluter pays," for the funding, organization, management and operation of disposal and other facilities required for their wastes.

Further guidance was provided in 1998 in the Government of Canada's response to the Seaborn Panel. Significant policy objectives included:

- Establishment of dedicated funds by producers and owners to finance the long-term management of nuclear fuel waste, and
- Establishment of a waste management organization to report regularly to the federal government on the progress of used fuel management activities in Canada.

These objectives were incorporated into the *NFWA* resulting in the creation of the NWMO. The *NFWA* requires every corporation involved in the commercial production of electricity from a nuclear reactor to be a member of the NWMO. In turn, the NWMO is obligated to provide nuclear fuel waste management services to each member.

Under the *NFWA*, the NWMO is also responsible for developing and maintaining a funding formula, and waste owners are required to make corresponding payments, to ensure there are sufficient funds set aside to finance the implementation of APM.

The *NFWA* is administered by Natural Resources Canada (NRCan), a federal department responsible for the sustainable development and use of Canada's natural resources, energy, minerals and metals. NRCan ensures that the nuclear industry and the NWMO meet their responsibilities under the *NFWA*.

The Canadian Nuclear Safety Commission

Canada's nuclear regulator, the CNSC, has a mandate to protect the environment and the health, safety and security of Canadians, and to ensure that Canada's international commitments on the peaceful use of nuclear energy are respected. The CNSC's mandate also includes dissemination of objective scientific, technical and regulatory information to the public concerning the activities of the Commission and the effects on the environment and the health and safety of persons and activities it regulates. The *NSCA* gives the Commission authority to issue, renew, suspend, amend, revoke or replace licences to regulate the possession, transfer, import, export, use and abandonment of nuclear substances.

The CNSC staff review licence applications, make recommendations to the Commission and enforce compliance with the *NSCA* and its associated regulations, and any licence conditions imposed by the Commission. Licensees are bound to comply with the terms and conditions of each licence as they are set by the Commission. The Commission tribunal typically holds public hearings before making a licensing decision. Details on the role of the CNSC in regulating nuclear safety in Canada and the process for public hearings are available on the CNSC website at www.cnsc-ccsn.gc.ca.

Regulatory Requirements

Regulations under the *NSCA* prescribe the requirements to be met by licence applicants and licensees, in relation to the health and safety of the public and workers, packaging and transportation of radioactive materials, and security measures for use and storage of nuclear material. Applications for a licence must include information on such things as the proposed activity to be licensed and its purpose, proposed measures to ensure the radiation safety of workers and the public, proposed measures to control access and prevent loss or illegal use, and others. The application requirements are listed in the *General Nuclear Safety and Control Regulations*, and the *Class I Nuclear Facilities Regulations*. Other requirements for licensees are described in the *General Nuclear Safety and Control Regulations*.

The regulatory requirements for transportation are covered under the *Packaging and Transport of Nuclear Substances Regulations*. The security requirements for such transport are covered under the *Nuclear Security Regulations*.

The Commission, under the terms of the *Nuclear Liability Act*, determines the amount of basic insurance for each nuclear operator, with approval from the federal Treasury Board.

Licences Required for APM Implementation

Under the *General Nuclear Safety and Control Regulations*, and the *Class I Nuclear Facilities Regulations*, a facility for storage or disposal of used nuclear fuel constitutes a Class IB nuclear facility. Under the *NSCA*, a licence must be obtained from the CNSC to prepare a site for, construct, operate, decommission or abandon a nuclear facility. Once a site has been identified, the NWMO will, therefore, seek a site preparation licence and construction licence from the CNSC before proceeding to construct a long-term management facility for used fuel.

Transportation of used fuel in Canada requires a CNSC licence under the *Packaging and Transport of Nuclear Substances Regulations*.

Environmental Assessment for APM Implementation

During the licence application review process, the CNSC determines whether an Environmental Assessment (EA) is required for the applicant's proposed project under the *Canadian Environmental Assessment Act* (*CEAA*), and if yes, what EA track it would follow. For APM implementation, an EA would be required. EAs are used to predict the environmental effects of proposed initiatives before they are carried out. The EA may follow either the Screening or the Comprehensive Study track, with an option to have the project go through a Panel Review process instead. A

licensing decision by the CNSC for APM implementation will only be made after the EA process has been completed under *CEAA*. Details on the EA process are available at www.acee-ceaa.gc.ca.

Relevant Regulatory Guidance

The CNSC's regulatory guidance documents form an integral part of the regulatory framework. These documents contain guidance to licence applicants and licensees in areas where significant clarification on licensing requirements prescribed under the *NSCA* and its regulations is necessary. Long-term management of radioactive waste is one such area. The regulatory guidance document G-320, titled '*Assessing the Long-Term Safety of Radioactive Waste Management*,' provides to NWMO the basis for formally assessing the safety of APM. At an appropriate stage during licensing, documentation of a robust Safety Case for APM implementation based on G-320, and any future guidance, will be required. The Safety Case is envisaged to form part of a Safety Report to be submitted to the CNSC in support of a licence application.

Federal Laws of General Application

Canadian laws of general application that are relevant to aspects of the management of high-level nuclear waste include the *CEAA*, the *Canadian Environmental Protection Act*, and the *Transportation of Dangerous Goods Act (1992)*.

Environment Canada, with a mission to preserve and enhance the quality of Canada's natural environment and its biological diversity, administers the *CEAA* and the *Canadian Environmental Protection Act*.

Transport Canada, with a mission to create the best possible transportation system in Canada while protecting the safety and security of all Canadians, administers the *Transportation of Dangerous Goods Act (1992)*. The Act includes radioactive materials in its listing of dangerous goods and is applied in conjunction with the *Packaging and Transport of Nuclear Substances Regulations*.

Provincial Laws

As a matter of constitutional law, federal laws apply to nuclear waste management, and provincial laws of general application only apply to the extent that they do not conflict with federal regulation.

Although Alberta, Manitoba, New Brunswick, Ontario, Quebec and Saskatchewan have each enacted transportation of dangerous goods legislation, these provinces have largely adopted the federal standards set forth in the *Transportation of Dangerous Goods Act (1992)* in order to harmonize the regulation of the transportation of such goods across Canada. To the extent that there is any conflict between these provincial laws and the federal law, the federal law will prevail, as a matter of constitutional law.

International Agreements and Treaties

Canada does not regulate its nuclear industry in isolation from other nations. The International Atomic Energy Agency (IAEA) is an independent intergovernmental organization that serves as the global focal point for nuclear cooperation. It develops nuclear safety standards and promotes safety in applications of nuclear energy.

Canada is involved in a variety of international agreements that address nuclear waste management including (a) Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, (b) Convention on the Physical Protection of Nuclear Material, (c) Convention on Nuclear Safety, (d) Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, (e) *Antarctic Treaty*, (f) *Treaty on the Non-Proliferation of Nuclear Weapons*, and (g) *Agenda 21*.

The scope of each of these international instruments is summarized in the following table. The legal obligations imposed by international instruments that have come into force are only applicable to the signing country's government. Only those aspects of the international agreements that have been implemented into Canada's domestic law are relevant to persons other than the Canadian government. Canadian laws and regulations are consistent with the terms of international treaties covering the management of radioactive wastes and nuclear substances that Canada has ratified.

Table 1: **Overview of International Treaties and Conventions**

Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management

- Contracting Parties are required to ensure that all stages of spent fuel management (which includes storage, transportation and disposal) include appropriate steps to protect individuals, society and the environment against radiological hazards. The safety of facilities used for spent fuel management must be considered prior to their construction and operation, and this must be done through environmental assessment processes. Safety requirements for existing and future radioactive waste management facilities explicitly apply to disposal of radioactive wastes. Activities in the transboundary movement of spent fuel and radioactive waste must comply with the conditions defined within the convention.
- Canada has been a Contracting Party since the convention came into force on June 18, 2001.

Convention on the Physical Protection of Nuclear Material

- Transportation of nuclear materials should not be authorized unless it is established that the materials will be adequately protected during transport.
- Canada has been a Member State since the convention entered into force on February 8, 1987.

Convention on Nuclear Safety

- Encourages the implementation of a legislative and regulatory framework addressing the safety of nuclear installations and the establishment of policies that give due priority to nuclear safety.
- Canada has been a Contracting Party to this convention since it entered into force on October 24, 1996.

Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter

- Prohibits ocean disposal of radioactive wastes and other radioactive matter.
- Canada ratified the Convention shortly after it entered into force internationally on August 13, 1975.

Antarctic Treaty

- Prohibits the disposal of radioactive waste material in the Antarctic.
- Canada is a non-consultative party to the Treaty.

Treaty on the Non-Proliferation of Nuclear Weapons (NPT)

- *NPT* requires Canada to ensure that all nuclear material in the country is used solely for peaceful purposes. Pursuant to the Treaty, Canada entered into a safeguards agreement with the IAEA, which allows the IAEA to verify Canada's compliance with its international obligations. This agreement, called the *Agreement between the Government of Canada and the International Atomic Energy Agency for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons*, requires Canada to submit information on its nuclear material and activities to the IAEA and to provide access for IAEA inspectors to locations within the country. It entered into force on February 21, 1972.
- On September 8, 2000, the *Protocol Additional to the Agreement between the Government of Canada and the International Atomic Energy Agency for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons*, entered into force. This Additional Protocol enhanced the requirements for the provision of both information and access, thereby strengthening the scope of the IAEA's verification regime in Canada.

Agenda 21

- Promotes environmentally sound economic development. Chapter 22 addresses the safe and environmentally sound management of radioactive wastes, which includes transportation, storage and disposal activities. The goal of the programme implemented by Chapter 22 is "to protect human health and the environment, within a wider framework of an interactive and integrated approach to radioactive waste management and safety."
- As a Participating Country of the Earth Summit, Canada has adopted *Agenda 21* and pledged to consider the programmes, strategies and plans encouraged within it when developing and implementing domestic policies.

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