

# Briefing Note

## Nuclear Waste Management Organization

### Reports with respect to Nuclear Waste Transportation

A summary of four reports produced by the Nuclear Waste Management Organization discussing the transportation of nuclear fuel waste.

#### **Background**

The Nuclear Waste Management Organization (NWMO) was created by Ontario Power Generation, Hydro Quebec and New Brunswick Power, the generators and owners of nuclear fuel waste. The NWMO was directed by the Nuclear Fuel Waste Act to review three “options” for the long term management of nuclear fuel waste (continued storage at the reactor site, centralized storage, or geological disposal) and report with a recommended option by November 15, 2005 to the federal Minister of Natural Resources.

In May 2005 the NWMO released a draft recommendation for the long term management of nuclear fuel waste. The NWMO is recommending “deep geological disposal” at a centralized site. Given the current location of the nuclear fuel waste at reactor sites in Ontario, New Brunswick and Quebec, implementing this recommendation would require the transfer and transportation of the total volume of nuclear fuel waste in Canada.

#### **Report Summaries**

The Nuclear Waste Management Organization has - to date - released two discussion papers and a May 2005 draft report, three annual reports, and 56 background papers, as well as various meeting reports. This briefing includes summaries of the three background papers related to transportation and the transportation of nuclear waste as addressed in the May 2005 draft report.

#### **Status of Transportation Systems for High-level Radioactive Waste Management (HLRWM)**

Authored by Wardrop Engineering Inc., this 53 page report provides an overview of the current status of transportation systems for high level radioactive waste, beginning with a description of nuclear fuel waste in Canada, and an overview of nuclear fuel waste transportation internationally, including emergency response and containers. The report indicates that nuclear fuel waste has been transported in Canada for research purposes only, and only in small amounts. It identifies the licensee (carrier or owner) as being responsible for the safety of the waste transport. The report describes two different containers which are licensed in Canada for large-scale transportation of used fuel, and a “conceptual design study” conducted by Cogema for the transport of nuclear fuel waste. Cogema estimated 18,747 truck shipments would be required to move 3.6 million fuel bundles from storage to a centralized facility, or 1,930 rail shipments with 12,960 connecting/additional road shipments. No routes were identified. No analysis of radioactive releases during routine transportation operations or as a result of transportation accidents was included.

#### **Status of Storage, Disposal and Transportation Containers for the Management of Used Nuclear Fuel**

Authored by Aamir Husain and Kwansik Choi of Kinectrics, Inc, this 45 page report provides an overview of the current status of storage, disposal and transportation containers for high level radioactive waste. The report assumes deep geological disposal of used nuclear fuel waste. The report discusses nuclear power generation in Canada, current storage capacity at reactor sites and

world-wide, containers for disposal of used fuel in a deep geological repository, and containers for transportation of used fuel. The report describes two different containers which are licensed in Canada for large-scale transportation of used fuel, and “other designs”, eg. for reactor designs not used in Canada. No analysis of radioactive releases during routine transportation operations or as a result of transportation accidents was included.

#### **Review of the Fundamental Issues and Key Considerations Related to the Transportation of Spent Nuclear Fuel**

Authored by Gavin Carter of Butterfield Carter and Associates, LLC, this 34 page report provides a simple overview of issues related to the transportation of nuclear fuel waste. It describes radioactive waste as a hazardous good, describes the transport of hazardous goods, including international regulations and international experience (namely in the U.S., Europe and Japan) with various nuclear materials. It discusses accidents involving non-radioactive hazardous materials, and compares “incidents” (accidents) involving radioactive materials to catastrophic accidents involving non-radioactive hazardous materials. The report briefly and generally discusses risk assessment and impact assessment in the context of maritime shipments. It also discusses security requirements and emergency planning; discussions are not specific to the Canadian context. The report indicates that there are currently 1.5 million bundles of spent fuel in storage in Canada and suggests that, based on the U.S. experience with Yucca Mountain, extensive consultations should take place. It briefly describes the Yucca Mountain proposal and its status and public information and opposition related to the transport of used nuclear fuel waste. No analysis of radioactive releases during routine transportation operations or as a result of transportation accidents was included.

#### **Draft Study Report: Choosing a Way Forward**

The Draft Study Report, released by the Nuclear Waste Management Organization in May 2005, invites public comment and review of NWMO’s proposed recommendation for a long-term management approach for used nuclear fuel. The NWMO is recommending a “deep geological repository”. The 300 page draft study report sets out the NWMO draft recommendation, which it calls “adaptive phased management”, describes its consultation process to date, describes the three different options it considered (continued storage of the nuclear fuel waste at reactor sites, centralized storage, and geological disposal), and discusses implementation of the NWMO recommendation over a 300 year period. With respect to transportation, in Chapter 12 on “Institutions and Governance” the report describes the role of Transport Canada, and in Chapter 13 on “Description of Activities and Timetables” it provides a two paragraph discussion of “transportation and storage”. The report does not discuss methods of transportation and no analysis of radioactive releases during routine transportation operations or as a result of transportation accidents was included.

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Source: Reports as cited, available at [www.nwmo.ca](http://www.nwmo.ca)

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