

NWMO to Provide Low and Intermediate Level Waste Deep Geologic Repository Services to OPG

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The Nuclear Waste Management Organization will soon provide Low and Intermediate Level Waste Deep Geologic Repository (DGR) services to Ontario Power Generation (OPG). Authorization to enter into a services agreement with the Ontario-based electricity generating company was approved by the NWMO Board of Directors at its November 13 meeting.

Earlier in the year, the Board agreed in principle to transfer to the NWMO OPG staff working both on NWMO programs, and OPG's Low and Intermediate Level Waste repository project. The arrangement also provided for the NWMO to perform services for OPG to develop and license the proposed Low and Intermediate Level Waste repository, and to offer other lifecycle management services as may be agreed upon between the two companies.

The move is based on the need for NWMO to improve staff recruitment and retention, and take advantage of synergies provided by maintaining a joint team on deep geologic repositories and long-term nuclear waste management in Canada.

"This arrangement allows NWMO to gain first-hand repository experience in several areas including relationship building with a host community and licensing a repository through the regulatory system, and in the development, design, safety assessment, environmental assessment and construction of a DGR," said Ken Nash, NWMO President and CEO. "This will benefit the Adaptive Phased Management process," he added, and is consistent with the NWMO vision established in 2003 to manage in the long term Canada's nuclear waste in a manner that safeguards people and respects the environment, now and in the future.

"The NWMO will achieve cost savings by operating a joint team through the experience base and shared administration of a larger operation, and there will be a common and consistent approach to external relationships with regulators, Aboriginal people, the international community and others," said Mr. Nash.

CNSC Public Commission Hearing

The Canadian Nuclear Safety Commission (CNSC) held a Public Commission Hearing on November 5, 2008. NWMO Vice-President of Science and Technology Frank King (left) and Vice-President of Corporate Affairs Kathryn Shaver (right) provided an update to the CNSC on NWMO's work regarding the long-term management of Canada's used nuclear fuel. "At the present time, we are advancing our work on an important step of our program: the design of the process for site selection," said Ms. Shaver. "This being another key decision point in our implementation path, we have undertaken to work collaboratively with interested organizations and individuals as we develop this process by which we will identify an informed, willing host community for the deep geological repository."



Source: Canadian Nuclear Safety Commission

Design of Siting Process Well on its Way

During the past few months, the NWMO has engaged Canadians in dialogue to gather input on the design of a site selection process for a deep geological repository.

Multi-Party Dialogues

One of NWMO's engagement activities this Fall was a program of Multi-Party Dialogues convened in Ontario, New Brunswick, Québec and Saskatchewan from September 29 to October 15. "Participants in the dialogues made valuable suggestions and raised important questions as they thought through what an appropriate siting process for Canada might include," said Jo-Ann Facella, NWMO Manager of Social Research & Dialogue. The dialogues brought together a cross-section of opinion leaders, including municipal and community associations, the nuclear industry, labour, Aboriginal organizations and Elders, researchers, environmental non-governmental organizations, public health, the faith community and persons with practical experience in siting major projects. The full-day discussions on the design of a site selection process were focused on the questions posed in NWMO's discussion document, *Moving Forward Together: Designing the Process for Selecting a Site*. This includes key considerations for siting; major activities involved in the process; identifying stakeholders, and the information and tools they would need; technical and social considerations and criteria that would guide decision-making; and NWMO's challenges and opportunities in designing the process. A summary of discussions will be posted on the NWMO website.

Other Fall 2008 Engagement Activities

The NWMO also conducted a series of meetings and briefings, and participated in collaborative projects with Aboriginal organizations and Elders, representatives of reactor site communities, municipal organizations, community and industry organizations, the international community, and government departments. The NWMO also commissioned a public attitude telephone survey in November in order to learn the perspective of a cross-section of Canadians on the design of an appropriate siting process. E-dialogues, convened through Royal Roads University, provided

a discussion platform for young people from sustainable development backgrounds, as well as interested members of the public across Canada. A deliberative survey is available on the NWMO website at www.nwmo.ca for the public to comment on various design questions.

The Next Steps

Having heard from Canadians on an appropriate siting process, the NWMO is now working on a draft proposal for a site selection process, which will be released in 2009 for extensive review and dialogue.

The Bigger Picture

As we continue to move forward with the implementation of Adaptive Phased Management, the NWMO is in the process of updating its five-year implementation plan. The update, entitled *Implementing Adaptive Phased Management 2009 to 2013*, presents the 2009 business plan in the context of the NWMO's vision, mission and values, and the Strategic Objectives. The document describes the links among the many individual work programs in the technical, social, engagement and governance areas. "It is an important starting point to explain our work to both external and internal audiences," said Anda Kalvins, NWMO Director of Environment. "Our success depends on steady progress in all these areas." *Implementing Adaptive Phased Management 2009 to 2013* will be published in January 2009 and made available on the NWMO website.



NWMO DVD » Moving Forward Together

The Nuclear Waste Management Organization has produced a new DVD, entitled *Moving Forward Together*, in support of our dialogue to collaboratively design a process for selecting a site for a deep geological repository.

To receive your copy of the DVD, please call 1.866.249.6966 or email us at contactus@nwmo.ca.

Advancing Technical R&D

Fall 2008 has been very busy for NWMO's technical group. As part of our international co-operation on research and development, NWMO technical program staff hosted the Nuclear Energy Agency (NEA) *Reversibility and Retrievability Project Meeting* at our Toronto office; participated in a two-day training course given by the International Atomic Energy Agency (IAEA) on *Decision-Making and Stakeholder Involvement in Repository Development* in Toronto; and attended the 10th Meeting of NEA *Integration Group for the Safety Case* in Paris.

The team also remains active in geoscience, safety assessment, used fuel storage and repository engineering. A *Glaciation Scenario Safety Assessment Workshop* on three-dimensional groundwater flow and radionuclide transport was held in Toronto. With the goal of expanding Canadian expertise in *Glacial Systems Modelling*, a research grant was issued with the University of Toronto in September. The NWMO technical team also completed a Pitzer database on thermodynamic modeling of chemical species in the vault and geosphere using PHREEQC, as well as a report on the spatial variations of the diffusive properties of sedimentary rock. Thermal-mechanical analyses of a deep geological repository in sedimentary rock using the Nagra-type

horizontal placement method for used fuel containers was completed, and microbial experimental studies under various buffer densities and intermediate groundwater salinity values are proceeding. Results suggest limited microbial viability in a deep geological repository at lower groundwater salinities than previous studies.

NWMO staff presented technical research papers at the International High-Level Radioactive Waste Management Conference in Las Vegas in September on the *Safety Assessment of a Glaciation Scenario – Preliminary Results*, the *Glaciation Biosphere Model for a Canadian Used Fuel Repository*, and the *Microbial Impact on Selecting the Repository Sealing System Designs*. We were also present at Queen's University and the University of Ontario Institute of Technology for technical presentations to fourth-year engineering students, as well as at the Canadian Nuclear Workers Council Conference in Cobourg for an update on our technical program.

The newly established Independent Technical Review Group (ITRG) met with NWMO staff in September in Toronto to review NWMO's technical R&D program. The ITRG presented their annual review report to the NWMO Board of Directors and Advisory Council in November.

The NWMO will be meeting with the Canadian Nuclear Safety Commission (CNSC) in December in Ottawa for the annual NWMO Technical R&D Program Update with CNSC staff. The NWMO project interface arrangement with the CNSC is still under development and is expected to be finalized by early 2009.

NWMO Hosts Reversibility and Retrievability Project Meeting

The NWMO hosted the international Reversibility and Retrievability Project Meeting at the NWMO office in Toronto on October 8-10, 2008. The international Reversibility and Retrievability Project is being co-ordinated by the Radioactive Waste Management Committee of the Nuclear Energy Agency based in Paris, France.

Over the three-day meeting, presentations were made on the possibility of reversing one or a series of steps, and retrieving used nuclear fuel during implementation of a deep geological repository

program. Representatives from Belgium, Canada, Czech Republic, France, Germany, Japan, Korea, Spain, United Kingdom and United States, as well as the Nuclear Energy Agency and the International Atomic Energy Agency, discussed several themes including national policies on reversibility and retrievability and their development, regulatory requirements, stakeholder consultations, impact on repository designs, and the conceptual and practical aspects of incorporating reversibility and retrievability during the step-wise

implementation of a repository program.

"Retrievability of used fuel is an important characteristic of Adaptive Phased Management in Canada and the national approaches for long-term management of used fuel in other countries," said Sean Russell, Manager of Repository Engineering for the NWMO. "Portions of the technology to retrieve full-scale used fuel containers from a deep geological repository have been demonstrated at underground research laboratories such as SKB's Äspö Hard Rock Laboratory

in Sweden," he added, "and further experiments and demonstrations of retrieval technology are being planned in the future."

The presentations provided good information and discussion amongst the country representatives, as well as some insight as to the context and reasons for the various national policies on reversibility and retrievability.

Further studies and analyses are being planned by the Reversibility and Retrievability Working Group over the next two years, and an international conference on the subject is tentatively planned for late 2010.

Where Traditional Knowledge Meets Western Science

The NWMO has learned a great deal from Aboriginal people about their special relationship with Mother Earth. In order to continue our learning and share western science expertise with Aboriginal people, the organization initiated a three-part Traditional Knowledge Project in 2008.

The project was designed to explore the interweaving of Aboriginal Traditional Knowledge and western science as it applies to the work of the NWMO, and in particular, Adaptive Phased Management. The first phase of the project was to learn about the technical research being conducted at the Ontario Power Generation's Deep Geological Repository (DGR) site for Low and Intermediate Level Waste near Kincardine in Ontario. Participants visited the Western Waste Management Facility and the DGR laboratory to understand the nature of the science in the development of a deep repository.

Later, in order to experience Aboriginal Traditional Knowledge in practice, NWMO technical and engagement staff, along with members of the NWMO Aboriginal working group Niigani and facilitators, participated in a Cultural Fish Camp with a traditional Aboriginal family at their annual Fish Camp near Fort Good Hope in the Northwest Territories. The experience provided a natural environment for sharing traditional knowledge, while providing an opportunity for NWMO staff to develop and increase their skills in communicating scientific knowledge to Aboriginal Elders and youth.

The project concluded with a Traditional Knowledge Workshop bringing together holders of Aboriginal Traditional Knowledge, resource people with experience in industrial projects which are exploring ways to interweave traditional knowledge and western science, and NWMO technical and engagement team members. Workshop participants



Members of the Aboriginal community and NWMO staff shared their observations on the activities organized as part of the NWMO 2008 Traditional Knowledge Project at a workshop held in Toronto on November 4, 2008.

identified a number of ways to draw from the distinct strengths of each knowledge system, and shared their own experiences and observations. They discussed basic similarities and differences between western science and traditional knowledge, and they identified some opportunities and limitations of each.

"The whole process was rich in providing a better understanding of Traditional Knowledge," said NWMO Manager of Engagement & Aboriginal Relations Pat Patton. "It contributed immensely to our ongoing interest in learning more and understanding better two very different world views and knowledge systems, and how they can be interwoven in the NWMO's work," she added.

A report on the project will be available on the NWMO website at www.nwmo.ca in January 2009.

NWMO Advisory Council Tours Darlington Waste Management Facility

Ontario Power Generation's Darlington Waste Management Facility (DWMF) Plant Manager Doug Soutar (left) provided a tour of the Dry Storage Facility to NWMO staff and Advisory Council members Donald Obonsawin, The Honourable David Crombie, Eva Ligeti, Derek Lister and Dr. Marlyn Cook on November 13, 2008. The Dry Storage Containers in the background each contain 384 used nuclear fuel bundles and will provide safe, interim storage for at least 50 years until a long-term waste management facility is put in place.



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