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Presentation from
Natural Resources Canada

Présentation de
Ressources naturelles Canada

In the Matter of

À l'égard de

Ontario Power Generation Inc.

Ontario Power Generation Inc.

OPG's Deep Geological Repository (DGR)
Project for Low and Intermediate Level
Radioactive Waste

Installation de stockage de déchets radioactifs à
faible et moyenne activité dans des couches
géologiques profondes

Joint Review Panel

Commission d'examen conjoint

September 2014

septembre 2014



NATURAL RESOURCES CANADA - INVENTIVE BY NATURE

Natural Resources Canada's Review of: EIS-12-511 (Updates to the Geoscientific Verification Plan)

*Prepared for the DGR Joint Review Panel
Submitted on: August 25, 2014*


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NRCan's Role in the Environmental Assessment

- Since 2007, NRCan has been participating in the review of information and technical reports related to the proposed DGR Project, providing:
 - Technical comments and geoscience expertise to Canadian Nuclear Safety Commission staff in their review of the technical studies.
 - Specialist and expert information and knowledge, within the meaning of s. 20 of the *Canadian Environmental Assessment Act, 2012*, to the Joint Review Panel.
- NRCan does not have any regulatory or approval role for the Project.

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NRCan's Review of Updates to the Geoscientific Verification Plan (GVP)

Geology

- The GVP continues to reflect that professional geologists will conduct detailed geological mapping during shaft sinking and lateral development.
- Updates to the GVP added information about geological mapping of rock excavation walls using LIDAR survey; detailed plans and procedures are still to be developed.
- NRCan is satisfied with the information presented and has no additional recommendations related to geology.



NRCan's Review of Updates to the Geoscientific Verification Plan (GVP)

Hydrogeology

- The GVP indicates that the proponent will collect data during shaft sinking and lateral development through probe hole drilling, seepage observations, characterization of hydraulically-active features and permeability measurements, seepage water collection and a long-term solute diffusion test in the Cobourg Formation.
- The updated GVP provided significantly more detail on planned hydrogeological verification activities.
- NRCan is satisfied with the information presented and has no additional recommendations related to hydrogeology.



NRCan's Review of the Updates to the Geoscientific Verification Plan

Seismicity

- The updates to the GVP included measuring micro-seismic events associated with the stress redistribution within the pillars.
- NRCan finds these modifications to the GVP to be appropriate, as they improve the monitoring of deformation and rock stress during construction, increasing confidence that the geological integrity is as required.
- From a seismic hazard perspective, the updated GVP is satisfactory. NRCan has the following additional recommendation:

Recommendation: *NRCan recommends that the proponent consider including near-field micro-seismic monitoring as part of the GVP as this may provide timely information for the assessment of deformation and stress changes, should such changes exceed defined triggers.*



Near-field micro-seismic monitoring

What is micro-seismic monitoring?

- Microseismic events are earthquakes with a magnitude < 0 (far too small to be felt on the surface; may be heard underground)
- These events can occur as a result of human-induced changes to the stress distribution of the rockmass, causing tiny slips or shears that release energy
- Microseismic monitoring tracks where and how frequently the microseismic events occurred, and their size
- Events are localized to within a few metres
- Would significantly enhance the regional seismograph monitoring of the DGR vicinity, as this can only locate events down to about magnitude 1 and give locations to within a few kilometres
- Microseismic monitoring would provide additional, timely data relevant to contemporary changes in rock stress



NRCan's Review of the Updates to the Geoscientific Verification Plan

Clarifications

- NRCan does not consider that a microseismic system is needed at the DGR at the start of the construction phase
- However should deformation issues arise (e.g., changes exceeded pre-defined triggers), such a system could provide timely information about the redistribution of rock stresses to guide further excavation



Closing

- NRCan appreciates the opportunity to provide this submission to the Joint Review Panel.

