

889 Brock Road Pickering, ON L1W 3J2

Tel: 905.839.6746 ext. 5306
laurie.swami@opg.com

December 4, 2013

File: 00216-00531 P
CD#: 00216-CORR-00531-00216
Project ID: 10-60004

Dr. Stella Swanson
Chair, Joint Review Panel
Deep Geologic Repository Project

c/o Canadian Nuclear Safety Commission
280 Slater Street
Ottawa, Ontario
K1P 5S9

Dear Dr. Swanson:

**Deep Geologic Repository Project for Low and Intermediate Level Waste –
Acknowledgement of Information Request (IR) Package #12**

Reference: 1. JRP letter from Dr. Stella Swanson to Laurie Swami, “Information Request Package #12 from the Joint Review Panel”, November 8, 2013, CD# 00216-CORR-00531-00215.

The purpose of this letter is to acknowledge receipt of the Joint Review Panel’s request for additional information contained in Reference 1. OPG will provide responses to the Information Requests (IRs) in Package #12 as follows:

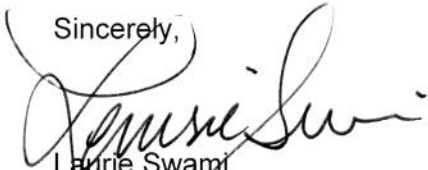
- IRs EIS-12-511 and EIS-12-512 by January 31, 2014;
- IR EIS-12-510 by March 28, 2014; and
- IR EIS-12-513 by April 4, 2014.

The above dates are based on the scopes of work to address the IRs described in the Attachment to this letter.

OPG has retained external experts to support the response to IR EIS-12-510 and IR EIS-12-513, and the timeline provided reflects their availability to participate and the scopes of work as presented in the attachment. Please confirm that the proposed response dates for each IR are acceptable.

If you have questions on the above, please contact Mr. Allan Webster, Director, Nuclear Regulatory Affairs, at (905) 623-6670, ext. 3326.

Sincerely,



Laurie Swami
Vice-President, Nuclear Services
Ontario Power Generation

Attach.

cc. Dr. J. Archibald – Joint Review Panel c/o CNSC (Ottawa)
Dr. G. Muecke – Joint Review Panel c/o CNSC (Ottawa)
P. Elder – CNSC (Ottawa)
D. Wilson – NWMO (Toronto)

ATTACHMENT

Attachment to OPG letter, Laurie Swami to Dr. Stella Swanson, "Deep Geologic Repository Project for Low and Intermediate Level Waste – Acknowledgement of Information Request (IR) Package #12"

December 4, 2013

CD#: 00216-CORR-00531-00216

**Detailed Scope of Work for OPG Responses to Information Requests
in Package #12**

Detailed Scope of Work for OPG Responses to Information Requests in Package #12

IR EIS-12-510

OPG will prepare a detailed narrative to explain how significance was determined for each residual adverse effect. The response will address those components of the biophysical environment for which residual adverse effects were identified and will include aboriginal interests. Valued Ecosystem Components (VECs) for which no residual adverse effect was identified will not be included. The significance narrative will use context-based reasoning, with reference to the literature.

The narrative will include context relevant to each residual adverse effect and will provide an explanation of the "measurable change" leading to identification of adverse effect in terms of comparison pre- and post-impact, and the assumed measurement error. The "measurable change" will include standard monitoring methods used for each component of the biophysical environment.

A description of how the significance conclusion was reached will be presented, explaining the decision-making process in the context of the site and reference materials, including other projects. Each of the factors considered and rationale for considering will be highlighted, along with an indication of which factors may be more important to a particular VEC.

The response will describe the degree to which the significance determination relies on risk avoidance and mitigation and why OPG is confident in each of the significance determinations. Additional risk mitigation measures will be described, where appropriate, in association with the significance determinations.

IR EIS-12-511

OPG will provide a revised Geoscientific Verification Plan, including more detail on methods, timing and sequencing. This revision will also include the addition of planned geotechnical monitoring activities required during DGR excavation and construction, as distinct from geoscience aspects needed for the safety case. It will also distinguish clearly between work conducted in the shafts and work conducted in the lateral horizon. The revised plan will incorporate information available since the current Plan was issued in 2011. The plan is expected to be further revised prior to the start of shaft construction to assure the most reliable monitoring methods are applied. Information on how OPG plans to develop triggers for changes to design or safety case will be provided through descriptive text in the IR response.

IR EIS-12-512

OPG will summarize the information available on the technical assessment for the expansion of the DGR to accommodate Low and Intermediate Level Waste (L&ILW) from decommissioning activities. This will expand on the information provided in the Undertaking #68 during the Hearings, and will include drawings illustrating a conceptual design for an expansion case, as well as a description of how the expansion would be managed and the timing of activities.

IR EIS-12-513

OPG will provide a qualitative analysis (narrative) of the relative risks of the four specified siting alternatives. The assessment will be conducted by a group of independent experts with relevant expertise including risk assessment. The experts will review relevant information assembled from the literature by OPG on these alternatives, including the Independent Assessment Study [1], or prepared by OPG in response to requests from the experts.

Key assumptions OPG has made in the development of the scope of work to respond to this IR include:

- The result will be a description of the relative risks of the four siting alternatives against several criteria, not an overall recommendation of a preferred siting alternative.
- The alternatives would accommodate 200,000 m³ of Low and Intermediate Level Waste, as per the Environmental Impact Statement [2].
- All wastes are assumed to be first transported to the Western Waste Management Facility (WWMF) for processing and temporary storage as may be needed before transfer to the DGR.
- All four alternatives are assumed to be in place indefinitely. Implications will be assessed considering a reference case with indefinite institutional control, as well as the implications of loss of institutional control after 300 years, of severe weather events particularly under near-term climate change, and of long-term glaciation.
- All four alternatives will be assessed for normal or expected conditions, and for selected accidents, malfunctions and malevolent acts.
- Characterization of the four siting alternatives is as follows:
 - Status Quo: Under this alternative, it is assumed that the wastes continue to be conditioned and stored at WWMF as per present practice with respect to processing (i.e., incineration and compaction), containers and storage facilities. The WWMF area would be expanded onto the proposed DGR site as needed for additional storage volume. In the future, as the design life of the current buildings and containers is reached (approximately 50 years), the wastes would be transferred to similar new buildings and containers on the site. After 300 years, the Low Level Waste (LLW) will be assumed to have decayed sufficiently that it can be transferred to a conventional waste disposal site.
 - Enhanced Surface Storage: Under this alternative, it is assumed that wastes continue to be conditioned and stored at WWMF. Additional effort would be undertaken to reduce the volume of wastes, in particular segregation and compaction of LLW. Wastes would be stored either above ground or in-ground, in containers and facilities similar to current structures but more robust (design life of approximately 100 years). In the future, as the design life of the buildings and containers is reached, the wastes would be transferred to new buildings and containers on the site. After 300 years, the LLW will be assumed to have decayed sufficiently that it can be transferred to a conventional waste disposal site.
 - DGR in Cobourg Formation: This alternative is the reference proposal as described in the Environmental Impact Statement [2], the Preliminary Safety Report [3] and supporting documents.

- **DGR in Granite:** Under this alternative, it is assumed that a repository would be located in a granite environment representative of Canadian Shield conditions. Normally a repository would be purpose-designed for a specific site. OPG does not have a granite site nor a design for a DGR for L&ILW in granite. For this qualitative assessment, it is assumed that the DGR repository concept can be transferred to a granite location. As there is no proposed location, a range of distances from the current DGR will be assumed where needed in the qualitative risk assessment. Where needed, site conditions described in the NWMO Fourth Case Study [4] will be used. This hypothetical crystalline rock site is preferred over that presented to the Seaborn Panel in 1994 as this site has been extensively used by NWMO and OPG for the past 10 years as a framework for conducting geoscience and safety case studies.
- Some additional analyses will be undertaken to support the conceptual description of these alternatives and the assessment of relative risk, but a full safety assessment would not be undertaken for the added alternatives.

References:

- [1] Final Report on Independent Assessment of Long-term Management Options for Low and Intermediate Level Wastes at OPG's Western Waste Management Facility. Golder Associates Ltd. report to Steering Committee Municipality of Kincardine and Ontario Power Generation. Mississauga, Canada. February 2004. (CEAA Registry Doc# 448)
- [2] OPG's Deep Geologic Repository for Low and Intermediate Level Waste – Environmental Impact Statement. Ontario Power Generation Report 00216-REP-07701-00001-R000. Toronto, Canada. March 2011. (CEAA Registry Doc# 298)
- [3] OPG's Deep Geologic Repository for Low and Intermediate Level Waste – Preliminary Safety Report. Ontario Power Generation report 00216-SR-01320-00001 R000. Toronto, Canada. March 2011. (CEAA Registry Doc# 300)
- [4] Adaptive Phased Management Used Fuel Repository Conceptual Design and Postclosure Safety Assessment in Crystalline Rock Pre-Project Report. Nuclear Waste Management Organization report NWMO TR-2012-16. Toronto, Canada. December 2012. (available at http://www.nwmo.ca/news?news_id=424)