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VIA E-Mail and RESS filing

April 29, 2011

TO: Ms. Kirsten Walli, Board Secretary, OEB (via e-filing; e-mail: BoardSec@ontarioenergyboard.ca);
AND TO: Mr. Mark Murray, Manager, Regulatory Projects & Land Acquisition, Union Gas Limited (via e-mail: mmurray@spectraenergy.com);
AND TO: Mr. Dan Jones, Assistant General Counsel, Union Gas Limited (via e-mail: dxjones1@uniongas.com);
AND TO: Mr. Louis Roesch, President, Kent Federation of Agriculture (via e-mail: kent@ofa.on.ca);
AND TO: Ms. Tania Persad, Legal Counsel, Regulatory, Enbridge Gas Distribution Inc. (via e-mail: EGDRegulatoryProceedings@Enbridge.com).

**RE: Union Gas Limited Jacob Gas Storage Pool Applications
EB-2011-0013\0014\0015
MNR Interrogatories**

Dear Sirs and Madams,

In accordance with Procedural Orders for this matter, please find attached the written interrogatories of the Ministry of Natural Resources.

Yours truly,

Demetrius Kappos
Counsel
Legal Services Branch
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c: Phil Pothen, Counsel MNR; Mr. Jug Manocha, Petroleum Resources Centre, MNR (via e-mail);
Ms. Zora Crnojacki, Project Advisor, Applications and Regulatory Audit, OEB (via e-mail: Zora.Crnojacki@ontarioenergyboard.ca).

Schedule “A”

Interrogatories of the Ministry of Natural Resources

1. RE: Issues 1, 2 and 3:

At **Section 3, paragraph 3** of the Applicant's Prefiled Evidence, the Applicant states that *“Once the Jacob Pool is converted to natural gas storage, Liberty will continue to produce hydrocarbons from the Black River Group”*.

With regards to the Liberty operations, please provide;

- a) a detailed description of all the wells and works, identifying those wells which penetrate the storage reservoir and documenting how the well construction prevents communication with the storage reservoir;
- b) a map showing in detail the Liberty wells and works; and,
- c) a description of the business relationship between Union and Liberty regarding operation of the Liberty wells and mineral rights.

How will the Liberty wells be monitored for possible interference with the storage reservoir?

If migration of natural gas between the storage reservoir and the Liberty wells is identified, is there a contingency plan to resolve or mitigate of the problem?

2. RE: Issue 1:

At **Section 3, paragraph 8, Schedule 3**, of the Applicant's Prefiled Evidence, what is the significance of the structure top map referenced?

How is that structure top map relevant to interpreting the pool boundary?

3. RE: Issues 1, 2 and 3:

At **Section 3, paragraph 9** of the Applicant's Prefiled Evidence, the Applicant states there *“is no evidence that the Jacob Pool is in*

communication with the Black River Group below or with adjacent reservoirs in the Trenton Group”.

What would constitute evidence of communication between the storage zone and the Black River formation?

Are observations or monitoring being performed and included that would be effective in collecting such evidence?

If yes, please describe the nature of these observations or monitoring activities.

What type or threshold of data being collected would trigger a concern about the type of communication mentioned in paragraph 9 ?

4. RE: Issues 2 and 3:

At **Section 3, paragraph 15** of the Applicant's Prefiled Evidence, the Applicant states that there are several non-storage wells within the proposed Designated Storage Area (DSA).

Are all of the non-storage wells that penetrate the proposed storage zone or are located within the proposed DSA built to the CSA Z341 storage standard?

If any of the non-storage wells are not built to the CSA Z341 storage standard, should they be upgraded to meet the CSA Z341 storage standard?

5. RE: Issues 1, 2 and 3:

At **Section 3, paragraph 19** of the Applicant's Prefiled Evidence the Applicant states that two of the three caprock samples tested were adversely affected by poor sample quality.

In view of this poor sample quality, should the caprock above the Jacob Pool be further evaluated? If not, why not?

In view of the poor sample quality and the relatively low threshold pressure measured for two of the three samples that were collected, is there sufficient evidence to conclude that the caprock for the Jacob Pool provides “excellent sealing properties”?

6. RE: Issue 1:

At **Section 3, paragraph 20** of the Applicant's Prefiled Evidence, the Applicant states that previous tests of Blue Mountain Shale at the Bruce Nuclear Power generation site "*demonstrate*" that there is an "*excellent caprock seal above the Jacob Pool*".

Given that the Bruce Nuclear Power generation site is located about 200 kilometres away from the Jacob pool, how can hydraulic testing of Blue Mountain shale from that site be relied upon to demonstrate that the Blue Mountain shale over the Jacob Pool provides an excellent seal?

7. RE: Issues 1, 2 and 3:

For **Section 3, paragraph 29** of the Applicant's Prefiled Evidence, please describe, in detail, all of the subsurface activities which were found as a result of the assessment mentioned there. In particular, for each of these subsurface activities, please describe in detail their purpose, mode of operation, minimum and maximum operating pressures, and the integrity of any existing well that penetrates the storage zone, with specific reference to casing, cement, and hydraulic isolation of the storage zone from any overlying porous zones.

With specific reference to the assessment mentioned in at Section 3, paragraph 29, please explain in detail how and why you conclude there is "*minimal risk with respect to potential migration of natural gas between any known existing or abandoned wells within 1 km, or any existing subsurface operations within 5 km of the Jacob Pool*"?

8. RE: Issues 1, 2 and 3:

At **Section 3, Schedule 1** of the Applicant's Prefiled Evidence, the well REC 1 north of the proposed DSA boundary is indicated as a gas show. In which formation was the natural gas encountered?

What evidence is there, if any, that the gas interval encountered in the well REC 1 is not in communication with the natural gas storage reservoir?

9. RE: Issues 1, 2 and 3:

At **Section 3, Schedule 9** of the Applicant's Prefiled Evidence, the Applicant states under the section entitled "Executive Summary" that "*Porosity values of the cores from the specified depth [865.29m, 867.31m*

and 870.09m TVD] interval of the well indicated that the formation seems to have a limited storage capacity with restricted transport properties.” Are the above-noted depths for the core samples tested taken from the proposed storage zone?

If yes, please explain why the Jacob Pool is suitable for storage despite these findings of limited storage capacity and restricted transport properties.

If not, how are the porosity values referred in Section 3, Schedule 9 relevant to evaluation of the Jacob Pool?

10. RE: Issues 2, 3:

At **Section 4, paragraph 1** of the Applicant's Prefiled Evidence, what will be the wellhead configuration of the I/W and observation wells referred to?

Please provide schematics c/w material specifications for each of these wells.

11. RE: Issues 2 and 3:

At **Section 4, paragraph 7** of the Applicant's Prefiled Evidence it is proposed that wells RR9 (Licence T006778) and CanEnerco/CNR #23 (Licence T009591) be converted to observation wells. Will these wells be upgraded to meet storage standards?

If RR9 (Licence T006778) and CanEnerco/CNR #23 (Licence T009591) wells will not be upgraded to meet storage standards, why not?

If RR9 (Licence T006778) and CanEnerco/CNR #23 (Licence T009591) will be upgraded to meet storage standards, please specify all of the changes that will be made.

12. RE: Issues 1, 2 and 3:

At **Section 5, Schedule 1** of the Applicant's Prefiled Evidence reference is made to a proposed reservoir monitoring program for the Jacob Pool. What specific precautions are planned to ensure that the storage zone is capable of containing the proposed working pressures during initial injection and delta pressuring phases?

Please elaborate on what observed data and/or calculations would indicate a problem with injected volumes or pressures. I.e., What, threshold or difference between expected and actual results, would indicate a problem that would necessitate a halt to injection operations?