

BOARD STAFF INTERROGATORY #1

INTERROGATORY

References: Application EB-2016-0378, Application Cover Letter dated December 20, 2016 and Enbridge's Letter to the Ministry of Natural Resources and Forestry (MNR) dated October 14, 2016

Preamble:

Enbridge applied for an injection/withdrawal well (I/W well) drilling licence for TC 9 (Horiz#2). This would be a second attempt to drill a horizontal leg at TC 9 surface entry point using the existing vertical wellbore and a kick-off point. In the first attempt Enbridge drilled a horizontal leg TC 9H1 but did not reach a desired porosity zone. The MNR granted to Enbridge a licence to drill the TC 9H1 based on a favorable Report of the Ontario Energy Board to the Minister of Natural Resources and Forestry, dated March 10, 2016 (OEB Report EB-2015-0303).

In the EB-2015-0303 proceeding, Enbridge indicated that the need for the TC 9H1 was to replace 23% of Corunna Pool deliverability lost due to abandonment of two I/W wells and conversion of one I/W well into an observation well. Enbridge characterized this I/W well as a replacement well.

Enbridge, in its current application, stated that there are no changes in the evidence filed in the EB-2015-0303 proceeding and there will be no additional impacts not examined in EB-2015-0303 proceeding.

- the existing drilling pad and vertical wellbore and kick-off remains in place and will be used
- no additional land is required
- drilling procedures will be the same
- there will be no change in Risk Assessment
- there will be no change in Environmental Assessment
- the only directly affected landowner, Mr. Wellington, will be compensated for both the 2016 and 2017 drilling

Questions:

- a) Please discuss if there are any changes in the need to replace 23% of deliverability loss since the OEB's favorable Report EB-2015-0303.

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- b) Please indicate if the regulated storage services or market-based services will be made available by the replaced deliverability.
- c) What, if any, are the cost impacts of drilling TC 9(Horiz#2) for Enbridge's ratepayers? How have the costs of drilling TC 9H1 been treated?
- d) Please explain the unforeseen circumstances that resulted in an unsuccessful attempt to obtain the desired porosity zone.
- e) What information is available at this point that leads Enbridge to believe its second attempt will be successful?
- f) Please confirm that there are no changes regarding landowner matters, environmental and construction impacts, Risk Assessment and Environmental Assessment since approval of TC 9H1 the Report EB- 2015-0303.
- g) With respect to the requirements of the CSA Z341 "Storage of Hydrocarbons in Underground Formations", the Oil, Salt and Gas Resources Act and related regulations, please confirm that all of the relevant requirements will be or have been fulfilled to the satisfaction of the MNRF.
- h) Since filing of this application, has Enbridge communicated with the MNRF regarding the TC9 (Horiz#2)? If so, please provide copies of communication documents and logs.
- i) Has Enbridge conducted any additional consultation regarding the TC 9(Horiz#2) I/W well?
- j) Please discuss if Enbridge determined any Indigenous communities that may be potentially affected by drilling of the TC 9(Horiz#2).

RESPONSE

- a) The need to replace the 23% deliverability loss due to the abandonment of two wells and the conversion of one well to an observation well¹ still exists. Replacement of the deliverability is critical to ensure the continued reliability of the Corunna Pool, especially in the winter months.

¹ EB-2015-0303 March 10, 2016 Report

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- b) This well will be part of the regulated storage services.
- c) As noted, the TC 9H1 and TC 9H2 will share the same vertical element and the current application represents the addition of a second horizontal element from that vertical element. Also, while the deliverability of the TC 9H1 was not quite as hoped, it will be used and useful along with TC 9H2 for injection and withdrawal from the reservoir. Currently, costs are tracked and as the well is not yet in service, the costs would be considered construction work in progress. Eventually costs will be categorized in a manner consistent with Enbridge's accounting practices. Please also see Response to d).
- d) Based on the interpretation of the 3-D Seismic, a porosity zone at 680m (-480m subsea) was targeted for TC 9H1 and although some porosity was encountered, it was not as widespread or prolific as originally planned. The original leg will be not be abandoned, but will be used to provide deliverability. The drilling of TC 9H1 proved that the reef was much more compartmentalized than was believed. While the TC 9H1 well was drilled in a known pool there are still stratigraphic variations within the pool that affect both the thickness and quality of the reservoir section. The American Association of Petroleum Geologists ("AAPG") Wiki² states:
- "Although individual development wells have a high probability of success, some development dry holes are drilled"....."Nevertheless, the probability of success as applied to development projects should *always* be the probability of *commercial success*, which for most development wells should generally be 60-80%."
- e) The geological information gathered during drilling operations of TC9H1 was used to refine the geological characteristics of the Corunna reef. Simply put, the additional work provides additional information which can be incorporated with the previously available information. It was determined that a more pervasive porosity zone existed at 690m (-487m subsea) and this zone was found in existing vertical wells TC 1, TC 4 and TC 5. The path of the proposed second horizontal leg will be positioned to the east of the original leg, closer to the above-mentioned vertical wells and will have a greater probability to bisect the targeted porosity zone than the original horizontal leg (TC 9H1).
- f) There are no changes.
- g) It is our understanding that there are no outstanding issues.

² http://wiki.aapg.org/Risk:_expected_value_and_chance_of_success

Witnesses: K. McConnell
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- h) Kathy McConnell of Enbridge received a telephone call from Jug Manocha of the Petroleum Operations Section of the Ministry of Natural Resources & Forestry (“MNR”) on February 28, 2017. Mr. Manocha asked what application Enbridge had sent to the Ontario Energy Board (“OEB”). It was explained by Ms. McConnell that it was the drilling application for the second leg at TC 9H in the Corunna Pool that was submitted to MNR on October 14, 2016 and forwarded by MNR to the OEB on November 28, 2016. Mr. Manocha asked Ms. McConnell to forward a copy of the OEB Letter of Direction. An email was sent to Mr. Manocha with a copy of the OEB Letter of Direction on February 28, 2017 (Attachment 1). In addition, an email was sent to Mr. Manocha by Stephanie Allman of Enbridge on the same date that included the application and evidence (Attachment 2).
- i) In accordance with the OEB Letter of Direction, dated February 7, 2017, Enbridge posted the Notice on Enbridge’s website. Copies of the Notice, the application and evidence were sent to all property owners and encumbrancers with lands or interest in lands identified in the search of title; the Clerks of the Township of Moore and the County of Lambton; all Indigenous Communities that have been consulted or with lands or interest in the lands directly affected by the proposed project; the Metis Nations of Ontario; all affected utilities and railway companies; and the Ministry of Natural Resources and Forestry, Petroleum Operations Section.
- j) There has been no additional consultation with Indigenous communities since utilizing the same above ground facilities ensures that there is no additional effect beyond those discussed in EB-2015-0303.

Witnesses: K. McConnell
M. Kirk