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January 4, 2007

Electronic Notification

Alberta Energy and Utilities Board
640 - 5 Avenue S.W.
Calgary Alberta
T2P 3G4

Attention: Ms. Giuseppa Bentivegna

Dear Madam:

Re: Application No. 1409180
Cold Lake Oil Sands Area - Clearwater Deposit

Attached please find additional information of EnCana Oil and Gas Partnership (EnCana). This information supplements the responses of EnCana to the Board Staff information requests respecting the study of Kade Technologies Inc., filed in response to Application No. 1409180 by Canadian Natural Resources Limited (CNRL).

As the Board is aware, EnCana and Husky Oil Operations Limited have agreed to concurrently file model data and results, in time to allow for an information request and response process prior to the hearing. EnCana would respectfully request that, should CNRL also intend to file model data and results, it do so as soon as possible, rather than wait for the reply evidence deadline.

Yours very truly,

McCarthy Tétrault LLP

Original signed by

D. G. DAVIES

cc: Alberta Energy and Utilities Board
Attention: Mr. Ernie Smith

Thackray Burgess
Attention: Mr. Patrick J. McGovern

Canadian Natural Resources Limited
Attention: Mr. Jared Paddock

Husky Oil Operations Ltd.
Attention: Ms. Susan Anderson

Borden Ladner Gervais LLP
Attention: Mr. Randall W. Block

Imperial Oil Resources
Attention: Ms. Susan C. Stark

ALBERTA ENERGY and UTILITIES BOARD
APPLICATION NO. 1409180
APPLICATION TO SHUT-IN GAS PRODUCTION
COLD LAKE OIL SANDS AREA – CLEARWATER FORMATION

Additional Information of EnCana Oil and Gas Partnership

Summary

Further to our October 3, 2006 responses to the Board Staff Information Requests of September 19, 2006, the following additional information is being provided:

Item # 1: Corrected and rerun cases

Item # 1 includes results of cases that were corrected and rerun due to errors in the dilation and maximum injection pressure in the datasets, as per 2b of our October 3, 2006 response document.

Item # 2: New cases relating to September 19, 2006 Board Staff Questions

Item # 2 includes the results of all new cases that were completed since our October 3, 2006 response to Board Staff questions. It includes cases that had not run to completion and new cases, as per responses 2j, 2l and 2m of our October 3, 2006 response document. It also includes new sensitivity cases relating to dilation gridblock treatment. The new cases are as follows:

- a) Response 2j: Non Edge cases NE 6Ab (1m gas cap, 10m bitumen) and NE 12Ab (10m gas cap, 20m bitumen) with gas cap depletion were run to an abandonment pressure of about 200 kPaa prior to start of HW bitumen CSS operations.

- b) Response 2l: Cases FL4 and FL5 have now been run to completion.

- c) Response 2m: Heterogeneous reservoir cases are SPE 16737_1, SPE 16737_2, SPE 16737_3 and SPE 16737_4.

- d) New cases were run involving sensitivities in the dilation parameter treatment around the wellbore and the bitumen reservoir. The new cases for the Non Edge reservoir type are NE 6W, NE 7W, NE 8W, NE 12W, NE13W and NE 14W. For the Flank reservoir type, the new cases are FL 4REW, FL 5REW, FL 21RE, FL 22RE, FL 13W, and FL14W.

Summary results of all the original, corrected and rerun and new cases are included in Tables E.2_updated, E.3_updated, and E.4_updated for the Non Edge, Edge and Flank reservoir types respectively. Please also see the additional Tables in the Appendix section for further details regarding cases descriptions of the corrected and updated cases.

Overall Conclusions

The conclusions from the results of the corrected and rerun cases and the new cases are the following:

- There is no adverse impact of gas cap depletion on HW CSS bitumen recovery factor.
- Heterogeneous reservoir cases achieved similar HW bitumen oil recovery factors for depleted gas cap and undepleted gas scenarios.

Item # 1.

2b of the October 3 response: Corrected and rerun cases

In 2b of the October 3 response, we identified an error in the dataset for the Non Edge and Edge cases. The maximum injection pressure constraint and the dilation pressure were both set to 108,000 and 108,000 kPaa instead of 12,000 kPaa and 9,800 kPaa respectively.

We have rerun all the Non Edge, Edge and Flank cases involved. The following are the corrected and rerun Non Edge cases: NE 1, NE 2, NE 3, NE 4, NE 5, NE 7, NE 9, NE 10, NE 11, NE 12, NE 13, and NE 14. The following are the corrected and rerun Edge cases: ED 1, ED 2, ED 3, ED 4, ED 5, and ED 6. The following are the corrected and rerun Flank cases: FL 1, FL 2, FL 3, FL 8, FL 9, FL 10, FL 11, FL 12, FL 17 and FL 18. A summary of descriptions of the corrected and rerun Non Edge, Edge and Flank cases is presented in Tables E.1A_corrected, E.1B_corrected and E.1C_corrected respectively. A summary of the results of the corrected and rerun cases are included in Tables E.2_corrected, E.3_corrected and E.4_corrected for the Non Edge, Edge and Flank reservoir types respectively.

Results show no adverse impact of gas cap depletion on HW bitumen CSS.

Item # 2.

2j of the October 3 response: Cases run to an abandonment pressure of about 200 kPaa

We have now carried out two cases involving the Non Edge reservoir in which the gas cap pressure was first depleted to about 200 kPaa prior to conducting CSS using a horizontal well. These cases are NE 6Ab, NE 12Ab and involved depleting the gas cap in cases NE 6 and NE 8 to an abandonment pressure of approximately 200 kPaa respectively. Results of these cases are presented in

Table E.2_updated. Results of these cases show no change in the bitumen recovery factor if the gas cap is depleted to an abandonment pressure of approximately 200 kPaa prior to start of HW bitumen CSS.

2l of the October 3 response: Cases run to completion

Cases FL 4 and FL 5 have now run to completion. The datasets for these cases previously named FL 4 and FL 5 were renamed as FL 4RE and FL 5RE respectively after the models' grid cells were refined. Results of these cases are summarized in Table E.4_updated. Results of these cases show no adverse impact of gas cap depletion to an abandonment pressure of approximately 200 kPaa on the HW bitumen CSS recovery factors.

2m of the October 3 response: Heterogeneous Reservoir Cases

A heterogeneous reservoir model case was created using the geological data of Imperial Oil's Cold Lake Clearwater formation presented in the SPE paper¹ of E.S. Denbina et al (Table 3 in the SPE reference paper). Table 1_Item#2 presents reservoir properties of the four key facies in our model and as presented by Denbina et al.

To evaluate the effect of heterogeneity, a heterogeneous reservoir model was constructed based on geological data presented in the SPE 16737 article. Four layers representing the four facies types were further refined to 28 layers in our model. The reservoir described in the technical paper did not have a gas cap. A 5 metres gas cap was added directly on top of the bitumen zone and cases involving horizontal well CSS in the bitumen zone with depleted and undepleted gas cap scenarios were created and executed. Two key types of cases were set up, one involving a 5m gas cap directly overlying the bitumen zone and the other involving a 3m mobile water zone directly between the gas cap and the bitumen zone. A summary description of cases run involving the

¹ Denbina et al; "Evaluation of Key Reservoir Drive Mechanisms in the Early Cycles of Steam Stimulation at Cold Lake", SPE 16737, SPE Reservoir Engineering, May 1991.

heterogeneous Clearwater reservoir is included in Table E.1C_updated and summary of results is provided in Table E.4_updated.

Other New Cases: Dilation: permeability multiplier factor and dilation grid block coverage sensitivity cases

We have also constructed new cases and conducted further analysis to investigate the impact of changes in the formation dilation parameters and reservoir heterogeneity on HW CSS bitumen recovery factor under both scenarios of depleted and undepleted gas cap.

New cases involving sensitivity in the dilation permeability multiplier factors were carried out for the Non edge and Flank models. A permeability multiplier factor of up to 60 (at steam injection pressure) was used in the dilation model and applied in the bitumen zone only. Note that assigned dilation blocks and dilation permeability multiplier factors were exactly the same for the cases that are being compared (i.e. undepleted gas cap versus depleted gas cap). Furthermore, the sensitivity cases allowed us to compare the impact of applying dilation treatment to a single well layer grid blocks versus dilation treatment that includes additional gridblocks surrounding the well blocks in the bitumen zone. Results of the new cases are presented in Tables E.2_updated and E.4_updated for the Non Edge and Flank reservoir types respectively.

Sensitivity cases were set up to assess the impact of treatment of formation dilation on HW CSS bitumen recovery factors. The impact on HW CCS bitumen recovery factor is assessed for a given case by applying the following dilation gridblock treatments:

- application of the dilation permeability multiplier to a single layer containing the horizontal well

- application of the dilation permeability multiplier to a single layer containing the horizontal well and to additional well blocks in the bitumen zone.

To facilitate analysis of results we have further refined the reservoir grid blocks in the region of the horizontal well closer to the gas cap edge in the Flank cases FL 4RE, FL 5RE, FL 4REW, FL 5REW, FL 21RE, FL 22RE, FL 21REW and FL 22REW.

New cases involving changes in the gridblocks coverage with dilation for the Non Edge reservoir include NE 6W, NE 7W, NE 8W, NE 12W, NE13W and NE 14W. For the Flank reservoir, new dilation sensitivity cases include FL 4REW, FL 5REW, FL 21RE, FL 22RE, FL 13W, and FL14W. Description and results of these cases are included in Table E.1C_updated and Table E.4_updated respectively. As an example, Cases FL 4 REW (gas cap depletion to 200 kPaa) and FL 5REW (no gas cap production) involved dilation in the single layer containing the horizontal well. Cases FL 4RE and FL 5RE presented in the October 3 response involve dilation in all the gridblocks in the bitumen zone that that are directly above and below the horizontal well grid blocks. Results of these cases show no adverse impact of gas cap depletion on HW CSS bitumen recovery factor whether a single layer or multiple layers were involved in the dilation treatment.

APPENDIX

Guide to Tables

TABLE NO	DESCRIPTION
E.2_updated	Updated comprising original corrected and rerun and new cases. Non Edge Cases Results
E.3_updated	Updated comprising original, corrected and rerun and new cases. Edge Cases Results
E.4_updated	Updated comprising original, corrected and rerun and new cases. Flank Cases Results
E.1A_corrected	Corrected Table E.1A of September 5, 2006, EnCana Submission, Non Edge Cases Description
E.1B_corrected	Corrected Table E.1B of September 5, 2006, EnCana Submission, Edge Cases Description
E.1C_corrected	Corrected Table E.1C of September 5, 2006, EnCana Submission, Flank Cases Description
E.2_corrected	Corrected Table E.2 of September 5, 2006, EnCana Submission, Non Edge Cases Results
E.3_corrected	Corrected Table E.3 of September 5, 2006, EnCana Submission, Edge Cases Results
E.4_corrected	Corrected Table E.4 of September 5, 2006, EnCana Submission, Flank Cases Results
E.1A_updated	Updated comprising original, corrected and rerun and new cases. Non Edge Cases Description
E.1B_updated	Updated comprising original, corrected and rerun and new cases. Edge Cases Description
E.1C_updated	Updated comprising original, corrected and rerun and new cases. Flank Cases Description
1_Item 2	Reservoir Description Used in Heterogeneous Model Study

