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**VIA EMAIL**

February 7, 2007

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

Attention: Mr. Gary D. Perkins

Dear Mr. Perkins:

**Re: EnCana Oil And Gas Partnership (EnCana) Application No. 1394112  
Canadian Natural Resources Limited (CNRL) Application No. 1409180  
Husky Oil Operations Limited (Husky) Application No. 1481725  
Cold Lake Oil Sands Area – Clearwater Deposit**

Attached please find the information requests of EnCana to CNRL and Husky.

Yours very truly,

**McCarthy Tétrault LLP**

*Original signed by D. G. Davies*

**D. G. DAVIES**

DGD/pg  
Enclosures

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

Canadian Natural Resources Limited  
Attention: Mr. Jared Paddock

Thackray Burgess  
Attention: Mr. Patrick J. McGovern

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**

**ENCANA OIL AND GAS PARTNERSHIP (ENCANA) APPLICATION NO. 1394112  
CANADIAN NATURAL RESOURCES LIMITED (CNRL) APPLICATION NO. 1409180  
HUSKY OIL OPERATIONS LIMITED (HUSKY) APPLICATION NO. 1481725  
COLD LAKE OIL SANDS AREA – CLEARWATER DEPOSIT**

**Information Requests of EnCana to Husky**

1. On Page 2 of its reply evidence Husky states “Extensive piezometer data in Husky's Caribou leases located in the bitumen zone show pressure drops in excess of 50% in places”

Please identify the specific wells and piezometer depths where Husky believes the pressure has dropped by more than 50% of virgin pressure.

2. On page 14 Husky states “The piezometer pressure decline rate data is reasonably matched in Husky's reservoir simulation”. In Husky's Jan 19 2007 response to Encana information request 8. Husky states “simulation values have been shifted in time to line up with the first data point of piezometer data”

Please provide the model pressure time graph for the 16-7 grid blocks and the pressures for the 16-7 piezometers before the data was “shifted”.

3. Regarding the core data in Table 1 on page 16.

- a) If Husky really believes these two core samples with porosities of 34% and 29.8% are representative of shale intervals in Twp 69-4W4 why did it use a porosity of 10% for shale in its model?

- b) The two core samples listed have vertical permeabilities of 36.49 md and .98 md producing vertical to horizontal permeability (kv/kh) ratios of .069 and .034. What kv/kh ratio did Husky apply to the “shales” in its model.

4. In its January 30, 2007 reply submission, Husky provided a DVD containing input and output datasets for its 2D simulation. The DVD contains input and output datasets of 2D sensitivity runs for HSAGD Well Spacing (WS-34) and CSS Liquid Constraint (STL-35). Please confirm the following:

- a. No maximum liquid production constraints were applied to the CSS and HSAGD producers, and

- b. A maximum steam injection rate constraint of 1500 m<sup>3</sup>/d was applied to the CSS and HSAGD steam injectors.
5. Husky also provided a memory disc entitled “January 30, 2007 Husky Submission to Cold Lake Hearings Application Nos. 1394112, 1409180 and 1481725”. The memory disc contains input and output datasets for 2D (SIM-75 and SIM-75) and 3D (SIM-34 and SIM-35) model runs. Please confirm the following:
  - a. The 3D model runs did not run to completion and terminated in 2010-10-13
  - b. The CSS 2D run had a different maximum liquid production rate constraint for the depletion and the no depletion cases. The maximum liquid production rate constraint for the HWCSS well in the no depletion case was 750 m<sup>3</sup>/d and 1500 m<sup>3</sup>/d for the depletion case.
6. Husky indicates in s Section 6, pages 23-24 of its Reply Submission of January 30, 2007, that “limited optimization” of its model confirms “harmful effects.”

EnCana has rerun Husky’s current HWCSS 2D models (with a modified operating strategy) using the same maximum liquid constraint of 750 m<sup>3</sup>/d for depletion and no depletion cases. No other changes were made in the models. Results indicate that a similar bitumen recovery factor of 40.4% of OBIP is achieved for both cases indicating no adverse impact of gas production on HWCSS (see attached Table 1 below). This pair of cases also provides a better optimization in terms of oil recovery factor and cumulative SOR when compared to the Husky’s current HWCSS 2D model results shown in Figure 6.1 of January 30, 2007 Reply Submission of Husky.

Also, EnCana has rerun Husky’s HSAGD 2D models using the same well schedule for the HSAGD CSS wells as in the HWCSS model wells and no other changes were made to the models. Results of the EnCana’s runs of Husky HSAGD (see attached Table 1 below) show that no depletion and the depletion cases achieved similar bitumen recovery factors of approximately 45% OBIP. These results indicate no adverse impact of gas production of bitumen recovery factors. Furthermore, EnCana’s runs provide a better optimization with a higher bitumen recovery factor and lower CSOR of 6.2 and 6.03 respectively for the depletion and the no depletion cases when compared to those presented in Figure 6.1 for HSAGD in the Husky’s reply submission of January 30, 2007.

In light of the above could Husky please:

- a. Indicate which factors in the model it was trying to optimize.
- b. Provide a justification for using different maximum rate constraints in the no depletion and depletion CSS runs.

A DVD of all the input and output cases of EnCana’s run of Husky’s 2D models is being provided.

**TABLE 1: Comparison of results of EnCana’s run of Husky’s current 2D models with Husky’s current model results shown in Figure 6.1 of Husky’s Reply Submission of January 30, 2007.**

**2D HWCSS**

Case Name	Gas Cap Depletion	Production Constraint Maximum Liquid Production Rate (m3/d)	Min BHP (kPa)	CSOR m3/m3	Bitumen Recovery Factor (%)	Comments
d08gc-2d-Dep200.dat	Depletion	1500	1000	5.9	34.9	Husky's current 2D
d08gc-2d-NoDep.dat	No Depletion	750	1000	5.3	40.4	Husky's current 2D
d08gc-2d-Dep200.dat	Depletion	750	1000	5.1	40.4	EnCana's run of Husky's current 2D
d08gc-2d-NoDep.dat	No Depletion	750	1000	5.3	40.4	EnCana's run of Husky's current 2D

**2D HSAGD**

Case Name	Gas Cap Depletion	CSS well Schedule	CSOR m3/m3	Bitumen Recovery Factor (%)	Comments
d07gc-2d-Dep200.dat	Depletion	Husky's Schedule	6.87	41.9	Husky's current 2D
d07gc-2d-NoDep.dat	No Depletion	Husky's Schedule	6.22	45.7	Husky's current 2D
d07gc-2d-Dep200.dat	Depletion	As in HWCSS well schedule	6.2	44.7	Encana's run of Husky's current 2D
d07gc-2d-NoDep.dat	No Depletion	As in HWCSS well schedule	6.03	45.4	Encana's run of Husky's current 2D