

July 21, 2009

Manitoba Science, Technology, Energy and Mines  
Petroleum Branch  
Box 1359, 227 King Street W  
Virden, Manitoba  
R0M 2C0

**Attention: Ms. Jennifer Abel, P. Eng**  
**Chief Petroleum Engineer**

Dear Ms. Abel:

**RE: Proposed Sinclair Unit No. 2**  
**Unitization and Waterflood Enhanced Oil Recovery (EOR) Application**

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Thank you for confirming receipt and preliminary review of the proposed Sinclair No. 2 Unitization and Waterflood EOR Application submitted by Tundra Oil and Gas (Tundra).

As requested by your letter of June 18, Tundra hereby submits the following additional information to supplement the original Application;

#### **Unitization, Tract Formula and Data Submissions**

Tundra has reviewed in detail all the initial production values used for some well to calculate Tract Factors. Some issues associated with wells acquired by Tundra were identified and corrected. Original Oil in Place (OOIP) values for each Tract remained the same.

Revised initial Production values and recalculated Tract Factors were submitted to The Petroleum Branch under separate cover on July 7, 2009.

#### **OOIP Estimates**

The OOIP values for Sinclair Unit 2 were determined by GLJ Petroleum Consultants of Calgary. A detailed description of the OOIP estimates calculation methodology is attached as Appendix 9.

#### **Technical Reports**

Tundra maintains that the technical feasibility of an EOR project within the proposed Unit 2 area is best estimated from the production response profile observed from water injection in an analogous reservoir. Tundra believes the Sinclair Pilot Waterflood (WF) area reservoir and waterflood response is a suitable analogy based upon the following;

Both Sinclair Pilot WF and the proposed Unit 2 reservoirs have been recently developed with the same vertical producing well spacing and completion practices.

Proposed waterflood pattern development within Unit 2 is the same as in the Sinclair Pilot WF with 8 existing vertical producing wells and a horizontal injector resulting in an effective 20 acre spacing.

Since peak production in Jan 2008, average oil rate per producing well in the proposed Unit 2 has fallen dramatically with a primary decline profile similar to the Pilot WF wells primary decline (Figures 8 and 9).

A stratigraphic cross section between the Sinclair Pilot WF well at 9-4-8-29 W1 through 16-3-8-29 to 8-25-8-29 W1 in the proposed Unit 2 shows similar Middle Bakken and Three Forks log responses and reservoir section (Appendix 10).

Permeability vs Porosity cross plots of all available core data for wells within the existing Sinclair Unit 1 (including the Pilot WF wells), and the proposed Sinclair Units 2 and 3, indicate very similar reservoir rock characteristics. Appendix 11 outlines the cross plot comparison of all Three Forks core data. All available cross plot data for the Three Forks and Middle Bakken combined from all 3 project areas is attached as Appendix 12.

The proposed Unit 2 WF Recovery Factor (RF) has been forecasted at 22 % of OOIP which is slightly lower than the 24 – 25.5 % RF expected from the Sinclair WF Pilot. This is primarily due to the higher estimated water saturation (Sw) in the Unit 2 area reservoir.

## **Geological Reports**

Revised geological Appendices 1 through 4 are attached along with an updated List of Appendices. Geological mapping (Appendices 2 – 4) has been generated internally and provided to GLJ Petroleum Consultants for independent analysis as described in Appendix 9. The Three Forks formation has been further subdivided into Lyleton A and B sections for internal purposes.

## **Infill Drilling and Waterflood Development**

Tundra has targeted to begin waterflood development in late 2009 depending on receipt of necessary external and internal approvals, but expects the majority of planned injectors will be developed in 2 phases through 2010 and 2011.

Tundra also expects the proposed Unit 2 injection well development plan will continue as described based on the forecasted project production response and increased recovery factor of OOIP. Any future revisions to the proposed waterflood development plan and/or timeline would be based on;

- negative changes production response or pattern performance observed from the continued development and operation of the Sinclair Pilot WF / Unit No 1 EOR project
- reservoir response data that results in downward reserves recovery estimates
- major changes to other project economic assumptions

Tundra has not to date been able to predict what particular set of reservoir conditions contribute more or less to the potential for out-of-zone fracture growth. Tundra intends to control the waterflood operations through the practices described and believe this will significantly reduce or eliminate the potential for out-of-zone injection, undesired water breakthrough, or out-of-Unit migration.

If you have any questions or require further discussion, please contact myself at 403-513-1018 or Nancy Farmer at 403-513-1020.

Yours truly,

William (Bill) Jenkins

**TUNDRA OIL & GAS PARTNERSHIP**