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October 1, 2009

Alberta Environment  
Northern Region  
#111, Twin Atria Building  
4999 - 98 Avenue  
Edmonton, AB, T6B 2X3

Attention: Winnie Chan

Dear Ms. Chan,

**Re: ERCB Technical Modification to Add Solvent to the Saleski SAGD Pilot Project – ERCB Approval 11337 and AENV Approval No. 245592-00-00**

Laricina Energy Ltd. (Laricina) has applied to the Energy Resources Conservation Board (ERCB) to amend the Saleski Steam Assisted Gravity Drainage (SAGD) Pilot. Laricina plans to add solvents to steam in the SAGD process. This will require the addition of diluent treating and solvent recovery systems. The addition of solvents to the SAGD process will lower steam requirements while maintaining the production rate.

Solvent-Cyclic SAGD is based on the SAGD technology, slightly modified by the addition of solvents in addition to changing steam rates over the life of the well pair. This process consists of a series of injection time periods using different rates, solvent compositions and solvent types alternately or mixed with steam. The process continuously injects steam and/or solvents below fracture pressure to heat the reservoir and reduce the viscosity of the bitumen.

The inclusion of solvent addition to the Saleski Pilot Project scheme is a technical modification that enhances but does not materially change the project. Laricina believes that the nature of this technical modification does not necessitate an amendment to the Alberta Environmental Projection and Enhancement Act (EPEA) Approval (No. 245592-00-00) granted for this project.

There are three main modifications to the originally approved Pilot Project:

- 1) solvent injection and recovery into and from the wells;
- 2) the incorporation of diluent treating, as opposed to high temperature treating; and
- 3) phased facility development with respect to steam capacity and the number of wells.

The main components of the processing facility remain unchanged from the approved scheme except the glycol system has been removed; a vapour recovery unit (VRU) has been added; solvent handling equipment has been added; and the oil removal filters are no longer required. Additionally, the facility will begin operations with one well pair and one steam generator, leaving the second steam generator to be added if necessary for start up of subsequent well pairs.

There is no change to the planned location of the pilot plant from the approved scheme and no additional surface disturbance will be required. Air and noise emissions will remain at similar or lower levels compared to the approved scheme. Furthermore, no steam will be required to heat the emulsion, as was necessary in the originally approved scheme with high temperature treating, and the air make-up unit will be fuel gas fired.

Due to the change in the treating system which allows for better heat integration, the glycol system has been removed from the project design. This saves capital and operating costs since all heat will be transferred to the boiler feedwater (BFW). Heat transfer using the glycol system would have been much less efficient. It can be concluded from this that switching the utility glycol users to fuel gas is more energy efficient than the previous glycol system design required for high temperature separation treating as per the original application.

The VRU will collect vapours from several tanks. The vapours will then be refined and sent to the steam generators as fuel. In the approved scheme, these vapours were to be flared.

Compared to the worst case emergency flaring scenario presented in the September 2008 SIRs to AENV for the approved scheme, the worst case scenario resulting from the above-mentioned technical modifications involves a lower H<sub>2</sub>S concentration and increased flow rate which will result in a lower predicted maximum 1-hour SO<sub>2</sub> concentration.

Laricina is providing this update to AENV regarding the solvent addition and is requesting confirmation that an amendment to the EPEA approval is not required.

If you have any additional comments or questions regarding this update, please contact me by phone at (403) 718-8810 or by email at [Deepa.Thomas@laricinaenergy.com](mailto:Deepa.Thomas@laricinaenergy.com).

Sincerely,

Laricina Energy Ltd.



Deepa Thomas; B.Sc.  
Team Lead Reserves and Regulatory  
Laricina Energy Ltd.

cc: Bruce Thornton, OSUM Corp.