



JAGD (J-Well and Gravity-Assisted Steam Stimulation)

New Well Design & Thermal Recovery Method for Enhanced Recovery from Heavy Oil and Bitumen Reservoirs.

Background

Heavy oils and bitumens of the Western Canadian oil sands reservoirs (Peace River, Athabasca, and Cold Lake) are severely biodegraded and exhibit complex fluid viscosity and chemical compositional gradients at the reservoir scale. Recent studies demonstrate that compositionally graded heavy oil reservoirs exhibit large variations in fluid properties, particularly viscosity, which significantly impact production rates and ultimate recovery which should be considered in well design, recovery method selection and optimization of production strategies to maximize production and minimize costs (Larter et al., CIPC Paper 2006-134: 1-16)

While several methods to recover heavy oil and bitumen are available, there is a market need for more thermally efficient and cost-effective in situ recovery technologies. One such technology, "J-well And Gravity-Assisted Steam Stimulation" (JAGD) takes advantage of common vertical and horizontal changes in oil viscosity to enhance production from reservoirs. JAGD can be used for efficient recovery of heavy oil and oil sand bitumen from reservoirs with vertical oil mobility gradients.

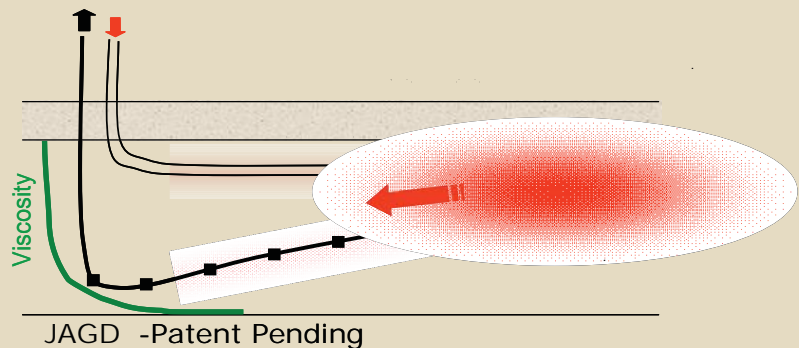
JAGD technology would benefit recovery in your leases in two main phases:

Phase 1: Cold Production

* Produce from low viscosity portion of reservoir

Phase 2: Thermal Production with JAGD

* Add J-orientated production well;
* Convert top well to steam injector, and
* Insert re-positional packer into top well to inject steam and control steam conformance zone.



Areas of Application

JAGD technology can be applied to reservoirs completed for cold production for follow-up secondary recovery remaining bitumen and heavy oil, which is in low bitumen saturation and/or high bitumen viscosity portions of the reservoir or is applicable as primary thermal recovery technique.

Competitive Advantages

- * Higher recovery from reservoir beyond cold production recovery.
- * Cost savings in drilling because only one additional well is required (by using the cold production well as the steam injector). Efficient steam delivery so that chamber growth occurs along the full length of the horizontal steam injector well.
- * Easy control of the breakthrough of steam and water into the production well by using a novel steam trap procedure.
- * Ability to cut across shale or other steam barriers for improved steam delivery through the reservoir and thus increased recovery.
- * Reduced cSOR compared to SAGD.

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