

December 7, 2010



LGR Load Fluid Recovery Initiative Introduced

TO: Industry Clients

EFFECTIVE: Immediately

FORT ST. JOHN — The BC Oil and Gas Commission (Commission) is accepting test installation applications allowing group measurement on multi-well pad sites. These installations must provide sufficient data to show that the frequency of Liquid-Gas Ratio (LGR) measurement is appropriate and must also provide typical well performance data for the group of wells on the well pad by accommodating individual well testing.

At this time, the Commission is accepting applications seeking to vary the LGR testing exemption criteria for the first 12 months of production for individual wells.

Test installations may be approved based on individual applications subject to review by the Commission.

Applications should specifically address the following issues:

1. Specific royalty structures
2. Engineering practices
3. Operating concerns
4. Equity and reservoir management concerns
5. Measurement and reporting methodology

The Commission will utilize data from test installations to eventually develop and implement revisions to regulatory requirements for multi-well pad metering.

In proposing alternative measurement methodologies, operators should consider the following:

1. Temporary test separation equipment may be used for up to 12 months.
2. Individual well separation is to be maintained for a minimum of the first seven days of production.
3. Wells will require a minimum of monthly testing through a dedicated test separator for a minimum of 24 hours until the LGR ratio can be shown to be below $0.28 \text{ m}^3/1,000 \text{ m}^3$.
4. Group production must be allocated back to each well on a monthly basis within production accounting systems based on the most recent individual well monthly test rates.
5. If after 12 months the LGR ratio is determined to be greater than $0.28 \text{ m}^3/1,000 \text{ m}^3$, permanent separation may be required.

BACKGROUND:

The Commission defines a maximum LGR of $0.28 \text{ m}^3/1,000 \text{ m}^3$ above which permanent separation is

required and wet metering is not permitted. This requirement is consistent with other jurisdictions and is intended to minimize potential measurement error associated with wet metering and thereby minimize any risk to Crown royalties.

Hydraulic fracturing of unconventional reservoirs results in the injection of fracture fluids – or load fluids – into the formation being stimulated. These fluids flow back from the stimulated reservoir over time. Initial flow volumes typically contain significant volumes of load fluid, and as a result the LGR may exceed $0.28 \text{ m}^3/1,000 \text{ m}^3$.

As load fluid is recovered during production, the LGR will gradually approach the actual reservoir fluid conditions. For most unconventional reservoirs, it is expected that the actual reservoir conditions are such that the LGR will fall below the $0.28 \text{ m}^3/1,000 \text{ m}^3$ threshold for permanent separation (typically within two to four months after starting production, but longer periods may be required). Adherence to the current requirements for permanent separation in these circumstances may result in a large number of test separators requiring larger pad sites to accommodate additional equipment which would eventually be unnecessary.

If you have any questions regarding the above, please contact:

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