

Maximizing Liquids Rich Cuts in the Montney through GOR Control from Optimized Frac Design

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Summary (All headings should be Arial 12pt bold)

- When the downturn of 2014/2015 happened, the balance of technical designs and economics shifted as the low commodity prices reduced the ability of wells to pay themselves out. Most of the responses of industry was to cut costs as a sure way to increase the profit of wells, however this was met with mixed success. The Montney wells in the Kakwa field and surrounding areas are in the liquids rich window for which the condensate to gas ratio is crucially important for economic success. With a long production history, the 2014/2015 and prior wells had many wells with ceramic or resin coated tail-ins showing a much higher condensate to gas ratio than using only silica sand as most operators switched to since that time.

Theory / Method / Workflow

- The first step was to obtain the several different types of completions reports on each of the 1,203 well, the oil/gas/water production records for each well, and build a frac database. This includes the frac fluid type, fluid amount, proppant types, proppant amounts, lateral length, number of stages, type of completions, and calculating the derivatives of stage spacing, cluster spacing, perforation strategy, proppant intensity, and fluid intensity, amongst other details. By comparing 12 groups of the same completions techniques in close proximity with the exception of proppant type allows for one large groups of wells to be compared to another.

Results, Observations, Conclusions

- Depending on the base frac design, the condensate to gas ratio was 200-to 300% higher for the first 24 months until the production type curves crossed for the first time. The incremental condensate production significantly increased the ROI in 10 out of the 12 cases.
- The impacts to the ROI were significant at the lower commodity prices of the last 5 years, and with the return of higher commodity prices this is even more significant.
- With the return of higher commodity prices, the completions techniques have not returned to same styles as before 2014/2015 with regards to proppant selection. Other factors with stages spacing, total stages, fluid volume, and proppant volume have all progressed with the general industry trends..

Novel/Additive Information

- Most of the fracturing details are missing from anyone's data analysis due to nearly all people using only frac focus. We spent significant time pulling other more detailed reports and compiling the most detailed database possible compared to other presentations from years past.

Acknowledgements

- This was work completed by frac engineers, reservoir engineers, and field operations experts.

References

Reference Style (use Arial 9pt normal)