

Examination of Infill Drilling Effects on Midterm Well Productivity: A Montney Case Study

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Summary

As fields are discovered, and subsequently developed, operators play with a variety of well spacing, landing depths and frac designs. This study focuses on Montney development and examines the effect of adding additional wells to pad locations on midterm production forecasting. The Western Canadian Sedimentary Basin is rich with data due to the regulatory practices in the resource rich provinces.

Theory / Method / Workflow

Pads with some level of infill drilling since 2018 were identified and grouped by azimuthal direction to assign families. The forecasting tool is a physio-statistical method that works best when peak rate is achieved or with 6 months of production (insert citation here). Wells with less than 6 months of production were filtered out. There were 32 pads identified, 13 of which were in the same field (Heritage) and zone (Montney). Each pad was studied while considering fracture treatment design, spacing (interwellbore and in stratigraphic column) and timing.

Results, Observations, Conclusions

Of these 13 pads, 2 pads showed an improvement to the parent wells forecast, 2 showed no change, and the majority (9) showed a decrease in parent well production. Finally, a study of the effect of shutting wells in on both the individual well and the pad was conducted to evaluate if the production handicap was a result of competitive drainage (parent-child interactions) or near wellbore phase behaviors (shut in effects).

Novel/Additive Information

This paper attempts to answer the question: what would the parent well would have produced if it had not been impacted by infill activity? A large majority of work presented focuses on either the short term (immediate fracture hits) or the long term (25 and 30 year EUR), whereas this focuses on midterm production forecasts (3-5 years of total well life), which would be the desired payout period for a lot of these wells.

Acknowledgements

References