

# Fracture Avoidance in the Bakken Formation: a Viewfield Case Study

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## **Abstract**

*The Viewfield Crater impact is a well-known geological feature present in southeast Saskatchewan. The 2.5 km in diameter impact occurred approximately 190 million years ago in the Early Jurassic. Besides the apparent structure influence of the impact site on geologic logs, the site is also highly fractured, which makes petroleum drilling proximal to the crater risky.*

*In 2012 two horizontal Bakken wells were drilled proximal to the crater impact site. These wells were operationally successful, with both the logs and chip-samples indicating a good quality reservoir with an abundant presence of oil. Both wells were completed using a set of three ton frags, open hole, ball-drop completions, with additional measures taken to reduce the risk of fracturing into the crater.*

*When the wells were put on production, they produced large volumes of water with an insignificant amount of oil. It is thought that the wells likely re-stimulated some of the natural fractures radiating from the impact crater, which would account for the high water-cuts. Following the unfavourable production results, some post-stimulation work was done on both wells in an attempt to reduce the water-cut.*

*To help enhance our understanding of the production results, more seismic data was acquired, which showed that the structure impact of the Viewfield crater expanded well beyond our initial assumptions. All the available data indicates that petroleum is preserved around the impact sight, and through the use of new technology and innovations the potential of this resource may yet be unlocked.*

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**Ryan Axani** graduated with a Bachelor of Science degree, majoring in Geology, from the University of Calgary in 2008. Over the past five years, he has continued to expand his knowledge and expertise of the geosciences by working on both oil and gas prone reservoirs in Alberta and Saskatchewan. Ryan is currently the Bakken Geologist at PetroBakken Energy Ltd. and is responsible for maintaining the company's solid foothold in this S.E. Saskatchewan resource play.