

## A Bakken OHML Case Study – a low permeability success story

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### Summary

The Viewfield Bakken Field, located in Saskatchewan, is the second largest conventional oil field in the Western Canada Sedimentary Basin and is positioned along the northern flank of the Williston Basin. The conventionally charged low permeability (0.1 – 3mD) reservoir first produced oil through just a few vertical wells from 1965 - 2003. In 2004, several attempts of hydraulically fracturing the reservoir, first in vertical wells and then with single stages in horizontal wells, had marginal success. By 2005, isolated horizontal multi-stage fracturing led to prolific wells and a period of rapid growth, and a subsequent land rush followed. The play continued to expand out as Crescent Point Energy (now Veren Inc.) consolidated a dominant position and, in 2009, initiated a successful waterflood with several large units now under secondary recovery (Fig. 1).

Along the northern updip edge of the field where the isopach of the productive Bakken sand thins, the limit of economic success of multi-stage fracturing was reached as induced fractures brought in water from the overlying Mississippian Souris Valley (Lodgepole) Formation. Numerous changes in drilling and frac designs were made and achieved limited success in containing induced fractures and extending the play however, a northern limit was still present.

In 2022 Crescent Point Energy (now Veren Inc.) approached the northern edge of the field with open hole multi-lateral (OHML) designs that had strong initial production rates and large estimated ultimate recovery volumes. These high rate, high return wells have successfully extended the play. Since 2022, 23 OHML wells have been drilled into 9 townships and OHML development has given the field a significant new area of expansion. This case study reviews the history of the OHML development and focuses on the geology, reservoir characteristics and well design improvements that led to the successful utilization of OHML drilling in the Viewfield Bakken play.

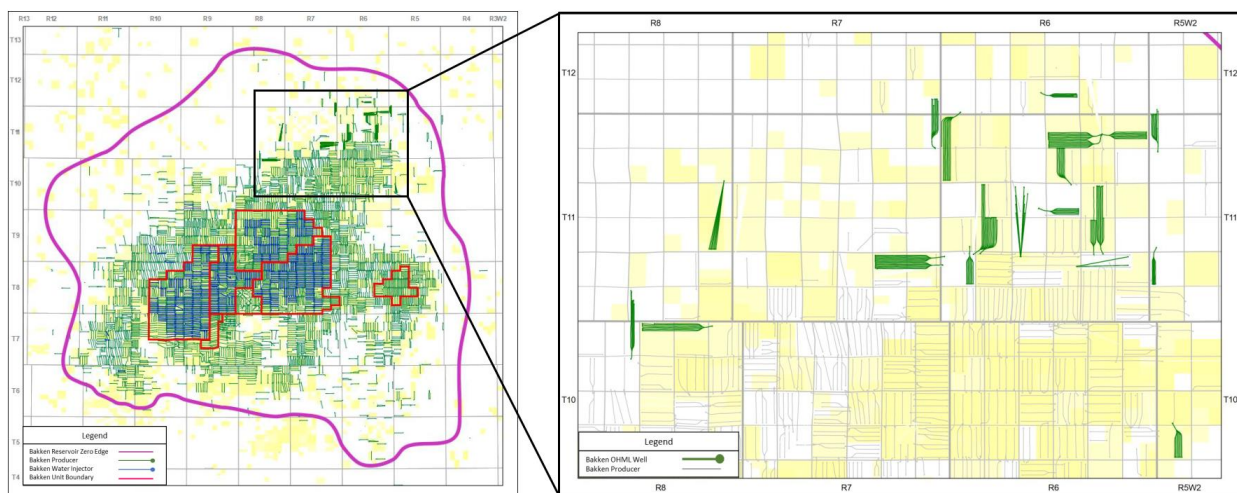


Figure 1: The Viewfield Bakken Field. Inset map – the updip northeastern portion of the field where OHML wells have successfully extended the play into thinner pay where multi-stage frac wells were unsuccessful