

Evaluation of the Spirit River Formation in NW Alberta: A Case Study of EnCana's Bighorn Deep Basin Development

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Abstract

The Falher and Wilrich members of the Spirit River Formation have a complex depositional history in the Canadian Deep Basin. The integration of geological, petrophysical and geophysical data in the Bighorn area has led to the successful exploitation of this resource by EnCana. EnCana has been developing the Cretaceous Deep Basin since 2001. Beginning with stacked Cretaceous vertical wells, the play evolved into the multi-well pad horizontal development we see today. The Falher and Wilrich members are the main targets for HZ well development in the Bighorn area. The Wilrich Member in Bighorn exists as a series of marine strand plain deposits, which are overlain by Falher F deposits of multiple types. The southeastern extent of the Falher F is characterized by large fluvial incised valley fill deposits, which flow northwest into an estuarine embayment and barrier islands. Moving up in the section, the Falher C is a thick reservoir of multiple stacked point bar accretions deposited in a meandering fluvial system. The Falher B is another mixed system comprising of lower fluvial deposits with upper marine shoreface deposits. All of these resources are over-pressured, high-deliverability, liquids-rich plays which EnCana has successfully developed with horizontal wells and multistage fracturing techniques.