

Initial observations on relationship of Bakken stress measurements to well production in the Viewfield area of Saskatchewan

Neil Watson¹, David Hume¹, and Kaush Rakhit¹

It is well known that substantial oil resources exist within the Bakken Formation of the Viewfield area of southeastern Saskatchewan. A critical attribute limiting production rates is the generally low permeability of the Bakken. Identifying higher permeability trends within the Bakken is critical to maximizing recoveries in this play.

Stress and permeability have a close relationship. In essence, low stress levels are believed to provide rocks with enhanced permeability in pore and conductive fracture systems, with a corresponding decrease in cementation. Relating permeability to other geological factors such as tectonics, geothermal characteristics, potential field data and productivity may provide exploration and exploitation groups with an enhanced view of prospective opportunities. For production groups, an understanding of how the minimum principal stress is distributed may assist in planning drilling and reservoir stimulation programs. This knowledge can result in reductions in drilling and completion costs, increased well bore reach and greater production.

The preliminary results of applying this method to the Bakken Formation in Viewfield, Saskatchewan using data derived from the Western Canada Frac Database will be discussed with a focus on implications for improving production performance.

¹Canadian Discovery Ltd. 300, 706-7th Ave SW. Calgary AB, T2P 0Z1

David Hume is the Director of Consulting Services at Canadian Discovery Ltd. He graduated from the University of Alberta in 1982 with a B.Sc. in Geology. The first part of his career was focused on field work in both the mining and petroleum sectors. Since 1990, he has worked as a consultant in the petroleum industry, first with Rakhit Petroleum Consulting Ltd. and now with Canadian Discovery Ltd. During this time, he has conducted hundreds of geological studies in Canada and abroad.