

The Illumination of Natural Fractures and Faults of the Muskwa Shale Play in Northeastern British Columbia: A Case Study

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Abstract

In this case study we discuss the natural fracture and faulting characteristics of the Muskwa Shale play in Northeastern British Columbia. The Muskwa is an ideal area for studying the acoustic effects of hydraulic fracture stimulation as these shales are known to be generally very brittle expressing interesting characteristics such as lengthy linear fractures. The microseismic data for this study was recorded by a surface array during the hydraulic fracturing for 9 horizontal wells, 8 of them located within the Muskwa formation. Two different completion techniques were used affecting how the rock fractured- perforation & plug and ball & sliding sleeve. The major trend seen in the data is a 70 ° fracture azimuth. These linear fractures are a phenomenon that can be explained by geologic analysis of the area, natural stresses in the rock, and the type of completion technique used. Specific wells in this pad will be discussed illustrating different geologic characteristics, stimulated fracture geometry, and the performance of the completion including focal mechanism and b-values analysis.