

A Magnitude-Based Calibrated Discrete Fracture Network Methodology

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Abstract

Microseismicity can be used as a diagnostic tool to characterize the nature of the hydraulic fracture stimulation. We coupled a proppant-filled Discrete Fracture Network (DFN) model with treatment information (slurry volume and proppant concentration) to compare fracture growth and proppant distribution in two wells targeting the Niobrara Formation in order to evaluate which treatment parameters had been the most effective. In addition, we present a method in which we combine a radial pore-pressure diffusion equation with the Mohr-Coulomb failure criterion to calculate the enhanced system permeability following hydraulic stimulation of the wellbore in order to evaluate differences in stage-by-stage production.