

Effect of Multi-Stage Fractured Patterns on Production Improvement of Horizontal Wells

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Abstract : One of the most effective ways for increasing production in wells that are faced with problems such as pressure depletion and low rate is hydraulic fracturing. Hydraulic fracturing is creating a high permeable path through the reservoir and simulated area around the wellbore. This is very important for low permeability reservoirs, which their production is uneconomical. In this study, the influence of the fracturing pattern in multi-stage fractured horizontal wells is analyzed for a tight, heavy oil reservoir to explore the impact of fracturing patterns on improving oil recovery. The horizontal well has five transverse fractures with the same fracture length, width, height, and conductivity properties. The fracture patterns are divided into four distinct shapes: uniform shape, diamond shape, U shape, and W shape. The results show that different fracturing patterns produce various cumulative production after ten years, and the best pattern can be selected based on the most cumulative production. The result also illustrates that optimum design in fracturing can boost the production up to 3% through the permeability distribution around the wellbore and reservoir.

Keywords : multi-stage fracturing, horizontal well, fracture patterns, fracture length, number of stages

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