عنوان مقاله:

Pushing the limits in hydraulic fracture design with a P-3D model and non-Darcy flow effect consideration

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خلاصه مقاله:

With the onset of hydraulic fracturing an applicable development method for production from gas wells- high or low permeable- was introduced, with fracture parameters optimization being the mainstay for the hydraulic fracturing design. In this study, a method for optimizing fracture parameters is introduced based on the Unified Fracturing Design (UFD. Thereafter, the maximum dimensionless productivity index and optimal dimensionless fracture flow conductivity are calculated for a certain proppant number in a fractured well. The calculations are followed by determining the corresponding dimensionless productivity index, the optimal half-length and the width of the fracture.Assuming a constant fracture height, the calculations become easy and a 2D fracture model would suffice to design it. But, it is not constant throughout the fracture and varies with the net pressure exerted on the fracture medium. All calculations above are carried out taking into account the effect of non-Darcy flow in the fracture with not only the fracture width and length, but also the fracture height being optimized. Considering these two issues, the effects of design parameters on the production from a hydraulically fractured well are investigated

کلمات کلیدی:

hydraulic fracture, unified fracturing design, non-Darcy flow, optimal height, design parameters