

عنوان مقاله:

Hydraulic Fracture Propagation in Naturally Fractured Reservoir Based On Leak-Off Rate

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خلاصه مقاله:

Fluid leak-off phenomenon plays a critical role in hydraulic fracturing operation. This phenomenon can be very impressive in successful operation of hydraulic fracturing. This operation is very complex in fractured reservoirs due to the reaction between induced fracture and natural fractures. In this study with the cohesive element method, the effect of presence of natural fracture on the magnitude of hydraulic fracturing fluid leak-off is investigated. First of all, cohesive element and extended finite element method methods are described. The fluid flow inside hydraulic fracture and the affecting parameters on leak-off of this fluid on adjacent environment are analyzed. Then, effects of natural fracture on hydraulic fracturing direction such as deviation, leak-off and the mutual influences (which includes the changes of stress regime around the natural fracture) and also changes in pore pressure are processed. The results indicate that presence of natural fracture will cause reduction in aperture of hydraulic fracture. This decrease will lead to extension of fluid lag and eventually delaying of leak-off phenomenon. However, this effect is negligible against the .positive impact due to shear and normal displacement on increasing leak-off

کلمات کلیدی:

Hydraulic fracture, Natural fracture, Interaction, XFEM

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