

عنوان مقاله:

Seven Sins of the Traditional PPFG

محل انتشار:

دومین کنفرانس ملی ژئومکانیک نفت (سال: 1395)

تعداد صفحات اصل مقاله: 19

نویسنده:

Hamed Soroush - *Principal Geomechanics Advisor, Dong Energy, Denmark*

خلاصه مقاله:

The term PPFG has been used by oil and gas people since late 1950s, several years before the formation of geomechanics, to address the anomalous subsurface pore pressure and the corresponding fracture gradient. PPFG specialists use several empirical approaches to not only predict the pore pressure, but also estimate the fracture gradient to provide drillers with a safe mud weight window. Geomechanics, however, utilizes the science of rock mechanics to improve drilling and reservoir performance. Unlike PPFG, geomechanics emphasizes on the mechanical behaviour of the formations to estimate in-situ stresses and consequently the safe operating mud weight window for wellbore stability. Thus, the mud weight window developed from a geomechanical model reflects rock mechanical properties and provide more depth resolution, which is a requirement for deviated and horizontal drilling in addition to hydraulic fracturing. Despite the advances in petroleum geomechanics in the last decades, the traditional PPFG approaches are still widely used in the oil and gas industry. These approaches are associated with significant risk due to their low resolution and not being base on scientific facts. This paper points at seven major pitfalls or mistakes involved in the traditional PPFG approaches that can be improved or corrected by geomechanics. These improvements can help developing wellbore stability models that are sensitive to both lithology and well trajectory .and, therefore, providing more reliable input for mud, casing and cement design and wellbore trajectory optimization

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