

عنوان مقاله:

Impact of Formation Damage on Performance of Hydraulic Fracturing During Drilling operation and The Importance of Proppant Technology In Hydraulic Fracturing: Application to Bahregan Field-Golf of Persian

محل انتشار:

کنفرانس بین المللی فناوری های جدید در صنایع نفت، گاز و پتروشیمی (سال: 1398)

تعداد صفحات اصل مقاله: 15

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خلاصه مقاله:

The Formation damages caused by different mechanism of drilling to reservoirs are different in types and value. In this paper, the geologic characteristics and types of such damages were analyzed. Then, based on the drilling operation, the experimental procedures on reservoir damages in three drilling technique (e.g. gas drilling, liquid-based underbalanced drilling and overbalanced drilling) were designed. It is concluded that the UBD is beneficial to reduce formation damage but it is, to some extent, sensitive to the stress and that the OBD has more reservoir damages due to the invasion of solid and liquid phases. It is concluded that the laboratory experiment results of reservoir damage are accordant with the reservoir damage characteristics in actual drilling conditions. Therefore, this method reflects accurately the reservoir damage characteristics and can be used as a new experimental evaluation method on reservoir damage in different drilling operations. Also despite deployment of an advanced high-strength ceramic proppant system specifically engineering for extreme closure stress environments one of the wells experienced a sudden jump in average skin factor most likely related to progressive degradation of the fracture treatment due to high pace drawdown. In order to assist in answering important question related to the potential for triggering further detrimental flow impairment with continued pressure decline, we have developed novel geomechanics testing techniques to quantify the development of both choke and fracture face skin effects as a function of increasing closure stress. These laboratory results provide useful data on the potential magnitudes of conductivity losses and interface damage to be expected with continued production and important insights into the likely micromechanisms involved.

کلمات کلیدی:

Formation Damage, Drilling Operation, Hydraulic Fracturing, Reservoir, Proppant

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