

عنوان مقاله:

Application of Geomechanics in Improving Drilling Operation Efficiency – Case Study

محل انتشار:

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نویسندگان:

Majid Sajjadian - National Iranian Oil Company, Exploration Directorate, Drilling office

Bahman Pirmoradian - National Iranian Oil Company, Exploration Directorate, Drilling office, chemical section manager

خلاصه مقاله:

Wellbore instability problems play a major role of increasing nonproductive time (NPT) during drilling processes. In most cases, the cost of drilling a well can be reduced by designing a suitable operational window using geomechanical models. Several wellbore instability problems have been encountered during drilling Sarvak Formation in an oil field in southern Iran. These problems include but are not limited to, mechanical stuck, caving, and tight holes. Data from some vertical wells are investigated to reveal the major factors that control the instability problems and to design an optimum mud window. A geomechanical model is developed to determine the in-situ stress and induced stresses by using numerous field and laboratory data for this Formation. Mohr-Coulomb failure criteria is used to estimate the optimum mud weight to avoid sticking. Our analysis shows that the majority of wellbore instability problems are mainly caused by, rock failure (shear failure) around the wellbore due to high stresses and low rock strength, and inappropriate drilling practice with respect to the heterogeneity of Sarvak Formation. Moreover, the wellbore failure analysis demonstrates the necessity of core analyses and field tests such as the triaxial test and the mini-frac. test to improve the geomechanical model when studying lithology with high heterogeneity

کلمات کلیدی:

Geomechanical Model, Drilling Operation, Wellbore Instability

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