عنوان مقاله:

Effect of rheological model on cuttings transport in foam drilling

محل انتشار:

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خلاصه مقاله:

Foam drilling is the one of main branches of underbalanced drilling. The rheological properties of drilling fluids such as foam directly affect on flow characteristics and hydraulic performance. Two rheological Herschel-Bulkly and Power law models were fitted to two foam systems in this study. Computational fluid dynamics (CFD) was used to simulate the effect of rheological model, foam velocity and foam quality on cuttings transport (solid- liquid flow) hydrodynamics in concentric and eccentric annulus during foam drilling operation. The simulation results are compared to the experimental data from previous studies. The results of CFD using Power law model are in good agreement with experimental results in horizontal annulus respect to Herschel- Bulkly model with relative error less than 8%. So, for CFD cuttings transport simulation in inclined and horizontal annulus, it is best to use Power law model rheological model parameters.

کلمات کلیدی:

Cuttings transport, Rheological models, solid- liquid flow, foam drilling, CFD simulation

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