

عنوان مقاله:

Erosion Damage for Various Flow Regimes During Particle Transport in Oil Wells: CFD Study

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خلاصه مقاله:

Oil extraction from weak sandstone formations that fails under changing in situ stresses leads to fine migration in near wellbore regions. Companies use selective completion practices or downhole filters to control particle production in oil wells. However, fines with various size dispersions will always remain that cause erosion damage in crude oil pipelines. Particles influence oil viscosity as well as density therefore impact flow regime rather than pressure drop in various depths. In this work, we employ Fluent software to simulate particle transport with the multiphase flow in the annulus that models cutting extraction during drilling rather than pipes which simulates the production process. We further estimate damage due to erosive flow under different flow regimes via adjusting various dissimilar particle dispersion functions. Results show erosion damage is at its highest value since a thin film of liquid slurry with high particle concentration forms near the inner wall pipe in the annular flow regime. Outcomes also illustrate that at high .drill pipe rotation rates, flow conflicts therefore erosion damage in the annulus increases significantly

کلمات کلیدی:

Erosion Damage, Particle Transport, Multiphase Flow, Crude Oil Pipeline, Flow regime

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