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**عنوان مقاله:**

Development of an environmentally friendly water-based drilling fluid for Iran oil fields

**محل انتشار:**

دومین همایش ملی مدیریت پساب و پسماند در صنایع نفت و انرژی (سال: 1390)

تعداد صفحات اصل مقاله: 9

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**خلاصه مقاله:**

The objective of this study was to develop a water-based drilling fluid which is environmentally friendly. Three three-parameter rheological models, i.e., the Herschel-Bulkley, Robertson-Stiff and Sisko, were considered to describe the pseudoplastic behaviour of drilling fluid. All samples showed non-Newtonian behaviour even at the lower concentrations. Two statistical procedures, i.e., the coefficient of determination (R2) and the sum of squared errors (SSE), were applied in order to select the best model describing the pseudoplastic behaviour of the high viscosity CMC solutions. The results exhibited that Robertson-Stiff model could more accurately fit the experimental data. Finally, the effect of the temperature and the concentration on the rheological parameters of Robertson-Stiff model, i.e., k, n, and , was examined. The developed models for the parameters k and n could adequately estimate their value as a function of the temperature and concentration, but the model considered for the parameter had not suitable accuracy where the coefficient of determination (R2) obtained 0.594. Hence, lowess type method was applied in order to better predict the values. Different amounts of span in terms of percentage were considered to select which span percentage is the optimum value based on the accuracy of the estimation and the calculation time. It was observed that span 10 % could precisely predict the value where R2 and SSE obtained 0.955 and 0.0693, respectively.

**کلمات کلیدی:**

Carboxymethyle cellulose; Rheological properties; Rheological models; Lowess fit type

**لینک ثابت مقاله در پایگاه سیویلیکا:**

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