Petrochemistry-2013

OMICS Group Conferences
Accelerating Scientific Discovery

World Congress on
Petrochemistry and Chemical Engineering

November 18-20, 2013 Hilton San Antonio Airport, USA

The influence of XC-polymer on drilling fluid filter cake properties and formation damage

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Abstract

The filter cake characterization is very important for successful selection of the drilling fluids that eliminates the drilling problems such as formation damage. An accurate knowledge of filter cake properties gives petroleum engineers a tool for efficiently managing hydrocarbon production process of a field.

This study aimed to experimentally investigate the effect of different concentration of XC-Polymer on filter cake properties, filtrate loss and formation damage to select the optimum concentration of the XC-Polymer. High Pressure-High Temperature (HPHT) filter press with ceramic disk device was used to conduct these experiments. Four samples of water-based drilling were used in this study, composed of the followings: distilled water as the base fluid, Bentonite as viscosifier and filtration control material, Barite as weighting material, Caustic Soda as ph control material, Soda Ash as hardness control material, starch as filtration control material and different concentrations of xanthan gum (XC-Polymer) as rheology control material with different concentrations. The chemical compositions of the filter cake were described by using Scanning Electron Microscopy (SEM).