ACID ADDITIVES EFFECT ON PRODUCTION - A BEAVERHILL LAKE CASE STUDY

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ABSTRACT

Since the start of large volume acid fracturing treatments of horizontal wells in the Beaverhill Lake formation many variations of acid chemistry have been used. Often the changes to the chemical formulations are based on cost reduction and treatment optimization since the volume of acid used became considerably large. Though possibly changes based on cost optimization may have affected the overall economics of the well.

This study will evaluate 56 wells that were acid fractured in the Beaverhill Lake formation, specifically in the Swan Hills area with acid blends that consisted of four different antisludge surfactant packages. Initial interpretation indicates that the acid blends containing cationic surfactants yield significantly higher oil production than the acid blends that utilize anionic surfactants once other variables have been normalized. Acid blends containing anionic surfactants have classically been the preferred chemical formulation for oil wells in the Swan Hills are due to the interpretation of the results of simple laboratory testing and the perception that the chemistry is more cost effective.

In an attempt to correlate the change in chemistry to changes in well production, additional lab testing to support previously published work will be presented, including reaction rate testing, wettability studies using core samples, and a modified acid-oil compatibility test with a longer term fluid exposure at reservoir conditions.

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