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<p>22798-PA SPE Journal Paper</p>	<p>The Use of Succinoglycan Biopolymer for Gravel Packing</p>	<p>1994</p>	<p>Sanz, G.P., Shell Research B.V. Gunningham, M.C., Shell Research B.V. Lau, H.C., Shell Development Co. Samuel, Allan J., KSEPL</p>	<p>This paper presents the results of laboratory experiments and field trials on a polysaccharide biopolymer, succinoglycan, for use in gravel packing. This biopolymer causes minimal formation damage and has unique rheological properties that combine high shear-thinning behavior with temperature-induced viscosity breakback; thus, it can be used without breakers.</p> <p>Gravel packing is the most widely used means of sand control in the drilling industry. Production efficiency tests carried out by Brunei Shell Petroleum indicate that significant reductions in the well PI, J, are often experienced during completions and that gravel packing alone may cause up to 90% of total impairment. Field experience and laboratory data show that the most likely reasons for impairment are (1) poor placement of gravel behind the casing, (2) formation damage caused by viscosifiers in the gravel-packing slurry, and (3) formation damage caused by the losses and subsequent killing operations.</p> <p>The consequences of incomplete perforation packing and subsequent intermixing of formation sand with gravel have been studied extensively. Any perforation that is not tightly packed will become plugged once fines are produced, and thus well performance will deteriorate. For a given gravel-pack assembly configuration, the gravel-packing slurry rheology plays the main role in placement of gravel behind the casing.</p> <p>The most popular polymers for gravel packing and fluid-loss control are hydroxyethyl cellulose (HEC) and xanthan. The performance of these polymers in carrier fluids depends critically on the preparation. Significant impairment may result if the polymers and fluids are not mixed, sheared, and filtered carefully. Consequently, the performance of a gravel-packing job depends on the quality control observed during slurry preparation. In fact, field use of xanthan-based slurries, despite its clearly superior rheology compared with HEC, has been hampered by the sensitivity of xanthan hydration to the mixing procedure.</p>
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