

Case Study



CDG Technology in South America

Colloidal Dispersion Gels Improve Oil Recovery in a Heterogeneous Argentina Waterflood (SPE 113320)

Situation

Extensive diagnostics, including tracers, injection profiles, review of historical production and reservoir fluid analysis corroborated the combined effect of reservoir heterogeneity and an adverse mobility ratio.

High concentration polymer gels, sometimes called “bulk gels”, can be effective in reducing water channeling in naturally fractured formations or in reservoirs with multi-darcy permeability anomalies. However, the Loma Alta Sur Field produces from a multi-layer unfractured matrix rock reservoir and is not a candidate for traditional bulk gel treatments.

Program

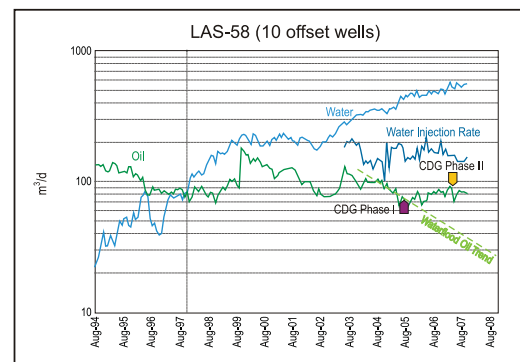
The primary objective of the the operator in this pilot was to improve volumetric sweep efficiency. CDG's were selected for the Loma Alta Field for several reasons: (1) CDG's offer significantly higher adsorption and residual resistance factors than uncrosslinked polymer; (2) CDG's can be injected in matrix rock and; (3) fresh water was not required for gel formation at low polymer concentrations.

Results

Results to date indicate a clear oil response from the Phase I pilot. The Phase II pilot, concluded in October 2007, is under evaluation. No significant operational problems were encountered during the fourteen months of CDG injection (Phases I and II). Based on incremental oil quantified as

of October 2007 from the Phase I pilot, the cost per incremental barrel of oil is approximately \$3.35. The ultimate cost per incremental barrel from the combined Phase I and Phase II CDG pilots is expected to be in the range of \$2.00 to \$3.00.

The operator is currently performing an updated reservoir characterization in order to implement a field-wide expansion of the CDG technology.



LAS-58 Pattern (Volumetric Parameters)

OOIP (m ³)	2,169,000
Actual Incremental Oil Recovery as of October 2007 (m ³)	21,194
Projected Ultimate Incremental Oil Recovery (m ³) as of October 2007	62,000
Projected Incremental Recovery Factor (%OOIP)	2.9