INFILL DRILLING AND WATERFLOOD RE-DEVELOPMENT OF THE COOPER JAL UNIT, LEA COUNTY, NEW MEXICO

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ABSTRACT

Cooper Jal is a waterflood unit located on the western edge of the Central Basin Platform in Lea County, New Mexico. The unit produces from the Permian-age Yates and Seven Rivers Formations. The producing interval includes 850 ft of stacked dolomite, siltstone, and sandstone cycles. Sandstones comprise the main reservoir facies. Although stratigraphic cycles are continuous throughout the unit area, sandstone facies and depocenters shift within each cycle. The resulting heterogeneity affects waterflood performance.

A reservoir management team combined production analysis, petrophysical, petrographic, and reservoir modeling techniques to modify the existing waterflood. First phase activity included infill drilling (40 to 20-acre), recompletions, and conversions. Multi-pay flooding presented unique problems and opportunities.

The team constructed a reservoir model using available PC and workstation software. Specific technology utilized includes: PETCOM™, Production Analyst™, Texaco's proprietary software: Reservoir Expert System (REX), Geographix™, and Stratigraphic Geocellular Modeling™. Reservoir data acquired through infill drilling and pattern modification enabled the team to enhance the reservoir model. Further development continues as the reservoir model is enhanced.