

Increasing Recovery Potential in Shale Gas Condensate

Research Themes

Because estimates for primary oil recovery from tight reservoirs range from 5 to 10 percent, there is growing interest in enhancing oil recovery. However, the common multiple transverse fracture horizontal well design favors single well injection and production strategies (soaking or huff and puff) over displacement processes.

Recently, well patterns have been proposed for water-flooding horizontal wells with multiple hydraulic fractures. Key to the success of any displacement process is assuring no connection exists between hydraulic fractures in injection and production wells. Well patterns likely to succeed feature positioning injector hydraulic fractures between the hydraulic fractures of producer hydraulic fractures. Such a pattern results in many simultaneous planar displacements. This study addresses enhanced oil recovery for shale gas condensate. In this case the injection fluid is carbon dioxide or produced methane in place of water. The compositional simulator is used to build the models for single well injection and production as well as for the proposed pattern. Formation and fluid properties typical for Eagle Ford gas condensate are used.

Results will be compared for various production schemes, including primary depletion, primary production followed by soaking, and planar fracture to fracture displacement using carbon dioxide or cycled produced methane.

Recent Accomplishments

1. Numerical model have been developed for the water-flooding of oil reservoir using the proposed well pattern. The model has been matched with the analytical model to validate the numerical model.
2. Validated model is used for the different production schemes.

Issues

1. Availability of field data to validate the model using history matching



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