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Comparative Analysis of Gas Condensate Recovery by Carbon Dioxide Huff-N-Puff; Carbon Dioxide Alternating Nitrogen and Nitrogen Injection: A Simulation Study

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Abstract

Conventional methods to mitigate condensate banking is to inject water or dry gas which raises the reservoir pressure above the dew point. Unfortunately, these methods are inadequate as they lead to late response in achieving low drawdown pressures. This study utilizes the compositional module of Eclipse to build a lean gas reservoir with heterogeneous properties having maximum liquid loading of 6.32% and simulate CO₂

and N2 injection scenarios. Comparative analysis on condensate and gas production from five case studies of CO2 huff-n-puff, CO2 cyclic injection, CO2 and, N2 continuous injection and the Gas Alternating Gas (CO2 and N2) are considered for 9 years of production. Parametric studies on the effects of injection and production rates, cyclic time and injection fluid composition investigated. N2, CO2, Cyclic, GAG, and CO2 huff, and puff injection cases resulted in oil recovery factors of 3.83%, 3.81%, 2.9%, 1.85% and 6.1% respectively.

Keywords:

[sagd](#), [machine learning](#), [reservoir](#), [artificial intelligence](#), [steam-assisted gravity drainage](#), [enhanced recovery](#), [composition](#), [stb](#), [figure 11](#), [injection](#)

Subjects:

[Improved and Enhanced Recovery](#), [Thermal methods](#)

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