Contribution ID: **132**                    Type: **Poster Presentation**

# Study on the Influencing Factors of N2-Water Alternating Huff and Puff Oil Recovery in Tight Oil Reservoir

*Thursday, 16 May 2024 15:05 (1h 15m)*

Water huff-n-puff (WHP) is one of widely used methods to improve oil recovery for tight reservoirs. However, the poor flow-conductivity and low sweep efficiency in matrix also restrict its oil recovery performance. Herein, the N2-water alternating huff-n-puff (NWAHP) was put forward to improve oil recovery at reservoir conditions. firstly, the feasibility of which was confirmed by the comparison of NWAHP and WHP experiment. secondly, the effect on oil recovery of injection method, N2-water ratio (NWR), soak time and number of injected plugs were investigated. The results showed that the single-cycle oil recovery of NWAHP was 13.95%, which was 3.51% higher than that of WHP, and it can improve the effect of WHP very well. The N2-water injection process could delay the breakthrough of N2 during production due to the presence of water slug, resulting in a higher oil recovery than water-N2 injection. Increasing the NWR could enhance the elastic energy and sweep more oil into the matrix, but if the NWR was too high, N2 breakthrough would occur prematurely during production. Increasing the soak time could improve the diffusion distance of N2 in the core and the effect of water imbibition. Increasing the number of injected plugs could enhance the pressure during the injection process, thereby improve the swept volume of N2 and water.

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**Session Classification:** Poster

**Track Classification:** (MS12) Advances in computational and experimental poromechanics