

**COMPARISON OF SELECTIVE SIMULTANEOUS WATER  
ALTERNATING GAS NITROGEN (SSWAG (N<sub>2</sub>)) BETWEEN  
SANDSTONE AND CARBONATE RESERVOIRS  
(An experimental study)**

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**Abstract**

The method selective simultaneous water alternating gas SSWAG is an enhanced oil recovery process. According to Nitrogen injection reservoir criteria, there are two rock types of reservoir that are suitable for nitrogen injection. Sandstone and carbonate are strongly advised in literature review; therefore, an experimental study to compare the two rocks is very useful. The mechanism of this process was to perform the selective (modified) simultaneous water alternating gas (SSWAG). The process was initially started with water flooding (WF), as a secondary recovery, to displace the possible producible oil original in Place (OOIP). When no more oil had been produced by WF, the developed SSWAG was applied, where the gas nitrogen (N<sub>2</sub>) was injected at the bottom of the producing zone, while water was injected at the top of the producing zone. The results showed improvement in the Total Oil Recovery Factor, ORF%. Furthermore, the results illustrated that ORF% in Sandstone sand pack was slightly less than that in carbonate sand pack, where it was

73.43% and 73.72% in sandstone and carbonate respectively. Eventually, the gas break through (GBT) was earlier when SSWAG had been applied in carbonate compared with sandstone sand pack. role in the quality of producing HAP. Longer the reaction time has enhanced the quality of the HAP formed.

**Keywords:** EOR, WF, WAG, SSWAG, ORF%, TORF%, GBT