

Gas While Drilling (GWD) Classification in Tight Shaly-Sand Reservoir; An Effort To Unlock Gumai Play Potential In South Sumatra Basin, Indonesia

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ABSTRACT

Gumai Formation which acts as regional seal for Talang Akar Formation becomes one of the most prolific reservoir in South Sumatra Basin - Indonesia and the primary exploration target in this area. Marine conditions were eventually established during the continuation of transgression sequence leads an open marine facies deposition in Early Miocene. Marine clastic deposits where calcareous shales, claystone and siltstones interbedded with fine-grained calcareous and glauconitic sandstones are the domination of lithology which targeted as the hydrocarbon reservoir.

Until 2016, the primary objective of PetroChina's exploration and production in Betara area is only from Lower Talang Akar Formation. Successful testing in some exploration wells which flowed gas & condensate from Gumai reservoir opened the opportunity to explore the new play potential in Betara Complex. An integration and evaluation of Gas While Drilling data initiated with the objective to determine our next Gumai reservoir candidate which capable to increase Jabung Block hydrocarbon discoveries. However, the limitation of conventional wireline logs data in Gumai interval generating a technical challenge in term of geological approach.

This paper describes how Gas While Drilling indicator is processed to generate potential and non-potential zone by cut-off and gas behavior analysis. Validation which performed by correlation and comparison with well logs, Drill Stem Test (DST), and Reservoir Performance Monitor (RPM) data succeed to observe Gumai reservoir in Betara Complex. After the data integration has been done, we are able to generate a Betara Complex potential map which could be overlay with reservoir characterization distribution as a part of risk assessment in term of potential zone presence. Mud log utilization and geophysical data information successfully covered the geological challenge in this study.