

## Defining Unconventional Hydrocarbon Parameter Using Shale Play Concept

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**Abstract :** Oil and gas consumption in Indonesia is currently on the rise due to its nation economic improvement. Unfortunately, Indonesia's domestic oil production cannot meet its own consumption and Indonesia has lost its status as Oil and Gas exporter. Even worse, our conventional oil and gas reserve is declining. Unwilling to give up, the government of Indonesia has taken measures to invite investors to invest in domestic oil and gas exploration to find new potential reserve and ultimately increase production. Yet, it has not bear any fruit. Indonesia has taken steps now to explore new unconventional oil and gas play including Shale Gas, Shale Oil and Tight Sands to increase domestic production. These new plays require definite parameters to differentiate each concept. The purpose of this paper is to provide ways in defining unconventional hydrocarbon reservoir parameters in Shale Gas, Shale Oil and Tight Sands. The parameters would serve as an initial baseline for users to perform analysis of unconventional hydrocarbon plays. Some of the on going concerns or question to be answered in regards to unconventional hydrocarbon plays includes: 1. The TOC number, 2. Has it been well "cooked" and become a hydrocarbon, 3. What are the permeability and the porosity values, 4. Does it need a stimulation, 5. Does it has pores, and 6. Does it have sufficient thickness. In contrast with the common oil and gas conventional play, Shale Play assumes that hydrocarbon is retained and trapped in area with very low permeability. In most places in Indonesia, hydrocarbon migrates from source rock to reservoir. From this case, we could derive a theory that Kitchen and Source Rock are located right below the reservoir. It is the starting point for user or engineer to construct basin definition in relation with the tectonic play and depositional environment. Shale Play concept requires definition of characteristic, description and reservoir identification to discover reservoir that is technically and economically possible to develop. These are the steps users and engineers has to do to perform Shale Play: a. Calculate TOC and perform mineralogy analysis using water saturation and porosity value. b. Reconstruct basin that accumulate hydrocarbon c. Brittleness Index calculated form petrophysical and distributed based on seismic multi attributes d. Integrated natural fracture analysis e. Best location to place a well.

**Keywords :** unconventional hydrocarbon, shale gas, shale oil tight sand reservoir parameters, shale play

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