The Identification of Top Volcanic Reservoir of Jatibarang Field, Onshore West Java, Indonesia

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The Eocene volcanic reservoir of Jatibarang Formation has been long interesting subject to studied. The reservoir that was interpreted as a lowermost oil-prone interval in onshore West Java was overlain unconformably by synrift/continental origin of fluvial - deltaic sediment (Talang Akar Formation). Its stratigraphic position as early sedimented interval in the basin, Jatibarang Formation has experienced long tectonic history, resulted of intense faulting, folding and fracturing. Besides, the unconventional reservoir rocks types within the interval are extremely contrast to the common oil-gas reservoir in Indonesia, especially related to log response, sedimentation process, internal architecture, etc. This complex situation is the most challenging subject to resolve in this study.

The objective of the study is to characterize the volcanic reservoir of Jatibarang Formation utilizing integrated data from geophysics, petrophysics, geological and also reservoir engineering data. The analysis presented within this paper is restricted on defining top reservoir characteristics comprehensively that later can lead to reservoir architecture and fracture network identification.

Standard open hole logging curves are used as the main tool in this study. As in common sense, current logging tool is designed for acquiring data in carbonate rocks or clastic sediment. For unique feature such as volcanic reservoir Jatibarang that consist of igneous rocks and volcaniclastic, the data acquired exhibit unique and variety log curve appearance.

Top Jatibarang volcanic was characterized by no single/specific log response. A combination of GR-SP, Resistivity, FDC-CNL and Sonic response reflect the contrast between overlying clastics to this unconventional reservoir. Sudden-disturbed and "non synchronous" log response characterize top of volcanics, marked by disturbed vertical SP trend, very high gamma (tuff) or very low gamma (lava) and very high density (lava). The response below top volcanic is also very specific; a lowering-upward of density is interpreted as downward deterioration of weathering below volcanic; long and blocky response of lava/tuff interval is evidence of low vertical variability and dramatic lateral thickness variation within single volcanic event reflects short lateral discontinuity/volcanic event.