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Basin Analysis and Petroleum System of the SongDa Messo-Tethys (Northwest Vietnam)

The SongDa Meso-Tethys (SMT) is Permian-Triassic structural system uplap Proterozoic-Paleozoic heterogeneous basement zones. It distributes between two suture zones and is controlled by SongHong and SongMa deep faults. Forming of SMT is caused by Permi-Triassic rifting with breaking of Paleozoic geo-blocks and filled by mafic volcanic rocks, carbonates, and chert-carbonates of narrow oceanic type. The post-rifting widening of SMT is represented by large distribution of the early-meddle Triassic epicontinental carbonates in the Northwest Vietnam. The matured SMT is characterized by meddle-late Triassic carbonatic-terrigenous and clastic formations distributing in narrow zones. Closing stage of the SMT Basin is caused by near pre-Norian folding (Indochinite). Some Pre-Indochinite carbonatic formations have formed basement highs of Nori-Retian paralic coal-bearing troughs and became fractured reservoirs. Post-Indochinite paralic troughs are filled by Nori-Retian organic-matter-rich sediments. Petroleum system of SMT is defined by Nori-Retian source rocks, which onlap Permi-Triassic fractured carbonate reservoirs in basement highs of Indosiniate post-folding troughs. Triassic petroleum play consists of Norian-Retian source rocks, Permian-Triassic fractured carbonates with local top-seal of Triassic clay-limestone schists and trap mechanism of basement highs and reversed faults. Late-Mesozoic postorogenic phase is represented by large distribution of acide and alkaline igneous complexes and foreland molasses without SMT any evidences.