World Academy of Science, Engineering and Technology
International Journal of Geological and Environmental Engineering
Vol:14, No:02, 2020

Architectural and Sedimentological Parameterization for Reservoir Quality of Miocene Onshore Sandstone, Borneo

Authors : Numair A. Siddiqui, Usman Muhammad, Manoj J. Mathew, Ramkumar M., Benjamin Sautter, Muhammad A. K. El-Ghali, David Menier, Shiqi Zhang

Abstract : The sedimentological parameterization of shallow-marine siliciclastic reservoirs in terms of reservoir quality and heterogeneity from outcrop study can help improve the subsurface reservoir prediction. An architectural analysis has documented variations in sandstone geometry and rock properties within shallow-marine sandstone exposed in the Miocene Sandakan Formation of Sabah, Borneo. This study demonstrates reservoir sandstone quality assessment for subsurface rock evaluation, from well-exposed successions of the Sandakan Formation, Borneo, with which applicable analogues can be identified. The analyses were based on traditional conventional field investigation of outcrops, grain-size and petrographic studies of hand specimens of different sandstone facies and gamma-ray and permeability measurements. On the bases of these evaluations, the studied sandstone was grouped into three qualitative reservoir rock classes; high (Ø=18.10 – 43.60%; k=1265.20 – 5986.25 mD), moderate (Ø=17.60 – 37%; k=21.36 – 568 mD) and low quality (Ø=3.4 – 15.7%; k=3.21 – 201.30 mD) for visualization and prediction of subsurface reservoir quality. These results provided analogy for shallow marine sandstone reservoir complexity that can be utilized in the evaluation of reservoir quality of regional and subsurface analogues.

Keywords : architecture and sedimentology, subsurface rock evaluation, reservoir quality, borneo
Conference Title : ICMPG 2020 : International Conference on Mining and Petroleum Geology
Conference Location : Rome, Italy
Conference Dates : February 17-18, 2020