

New Approach Using Acoustic Impedance Modeling for Reservoir Sand Identification in Brown Field Area: A Case Study for Besitang Field, North Sumatra Basin, Indonesia

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The strongly increase of gas demand along with decreasing the oil and gas production in the North Sumatra Area are facing a big challenge to enhance the oil and gas production. The latest technologies which have not been fully applied over the area become a reason why hydrocarbon potential from the main objective of Besitang River Sand (BRS) not yet optimally developed. The Acoustic Impedance modeling is approached as the new innovation to overcome the reservoir problem.

Besitang field was discovered with BST-1 exploration gas well in 1977. Recently, only BST-14 that still can produce intermittent oil from 21 development wells controlled by submarine fan system. The study area is located at North Sumatra Basin toward to the north of Telaga Said Field which proved the presence of oil bearing in BRS. Seismic interpretation and well correlation analysis are inadequate to characterize the reservoir distribution. Constrain Sparse Spike Inversion method is then chosen using several 2-D post-stack seismic lines from Aru area acquired in 1989 and 2 well constrained for getting the low frequency component to build geological model.

Dry wells reservoir can be distinguished from producing wells by comparing the difference value of acoustic impedance anomaly. The acoustic impedance modeling controlled by regional geology expected to be potential tool to enhance the confidence level in finding the proper position for infill drilling in mature area. Furthermore, the field still has a good opportunity to optimize the production from next infill development wells which will be drilled this year.