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Karakterisasi reservoir shale menggunakan inversi simultan pada lapangan "TAF", formasi Lower Baong, cekungan Sumatara Utara = Shale reservoir characterization using simultaneous pre stack seismic inversion at "TAF" field, Lower Baong formation, North Sumatra Basin

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Abstrak

Simultaneous inversion is one of the seismic method which can be used to characterize reservoirs that may also serve as a rock source. In this research, the characterization of shale reservoir is done on the field TAF, in North Sumatra basin with Lower Baong formation as the target formation. A P impedance parameter on the simultaneous inversion method is used to identify the existence of fluids while S Impedance parameter is used to identify the lithology of the target zone. The analysis of the simultaneous inversion is done using partial angle stack method, that which consists of the near angle stack 1 19, the mid angle stack 19 36 and the far angle stack 36 53.

The result of the analysis of the gas chromatography of the well data states that there are 2 layers of lithologies on the Baong Formation that which have the indications of hydrocarbon with each layer having the thickness of less than 5 meters. The result of the simultaneous inversion is obtained, with the value of P impedance ranging from 4000 8000 m s gr cc, the value of S impedance ranging from 1500 3000 m s gr cc and the value of density ranging from 2.2 2.5 g cc. These three values are assumed to correlate with the layer that is dominated by shale. The value of P impedance ranging from 8000 12000 m s gr cc, the value of S impedance ranging from 3000 5700 m s gr cc and the density value ranging from 2.5 2.75 g cc are also obtained that which are situated on the bottom of the Lower Baong formation near the top Belumai and are assumed to correlate with the other lithology that which is dominated by sandstone and carbonate. However, the result of the inversion of P Impedance and the Lambda Rho transformation, as well as the crossplot analysis of AI vs SI and the crossplot of LMR, has no indication of hydrocarbon fluids.