INTEGRATION OF SEISMIC INVERSION ACOUSTIC IMPEDANCE (AI) AND ELASTIC IMPEDANCE (EI) TO CHARACTERIZE RESERVOIR, A CASE STUDY: MUON FIELD

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Abstract
This research describes the application of acoustic impedance (AI) and elastic impedance (EI) seismic inversion to 3D seismic data in Muon field, Air Benakat formation Jambi sub-basin. There were twelve well log data used which consist six deviated well and six vertical well. AI inversion has been done in order to find porous zone. EI inversion which consider Vs and angle component has been done to detect presence of hydrocarbon. Model Based Hard Constrain method used in either AI or EI inversion. Crossplot between AI and V\text{clay} log show that target zones have a higher AI value than it’s shale. The high AI value may were caused by high cementation. Only three from five zones which could be separated from the shale based on it’s AI value (TG_1; TG_2; and TG_3). Each of them has a different cutoff value of AI. Neither TG_4 nor TG_5 could not be separated from the shale because the AI value were overlap. Beside it, the crossplot have also been done between AI and density-porosity log to aim linear equation. Linear equation between Density-Porosity log and AI log were used to predict porosity volume from AI inversion result. Because the target zones has a different AI’s cutoff value, the crossplot has been done for each zones. Castagna empirical relation were used to estimate shear wave velocity (V_s). Because the Castagna equation only valid in 100% water saturated, Fluid Replacement Modelling (FRM) were used to aim V_s in real condition. Based on amplitude trend analysis range of near and far angle were determined. The range of near
EI was $0^0-14^0$ and $12^0-22^0$ for far EI. Target zones had a different AI cutoff. Crossplot between near and far EI gave indication of hydrocarbon presence. Integrated analysis from AI and EI result gave some prospective zone which contain hydrocarbon in Muon field.

**Keywords**: AI Inversion, EI Inversion, porous zone, hydrocarbon