

ABSTRACT

RESERVOAR CHARACTERIZATION USING ACOUSTIC IMPEDANCE INVERSION AND PETROPHYSICS ANALYSIS OF EKMAI FORMATION SANDSTONE IN "X" FIELD OF AKIMEUGAH BASIN

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The Akimeugah Basin is one of a basin in Indonesia that has the prospect of producing oil and natural gas, where sandstone in the Ekmai Formation is one of a formation that has quite good hydrocarbon potential. In characterizing the reservoir, model – based seismic inversion and petrophysical analysis are needed.

Acoustic impedance inversion is a technique of making subsurface geological models with seismic data as an input and well data as a control. While petrophysical analysis is used to determine the physical properties of rocks in a formation. The use of model – based inversion and petrophysical analysis to obtain the continuity of acoustic impedance values in the Ekmai Formation and evaluate it with V_{shale} and porosity parameters which will determine the location and distribution of hydrocarbon areas.

Based on cutoff estimation, the v_{shale} cutoff is 0.62 v/v fraction and porosity effective porosity cutoff is 0.07 fractions. Based on results of acoustic impedance maps, values of 28000 ((ft/s)(gr/cc)) to 32000 ((ft/s)*(gr/cc)) are interpreted as a sandstone reservoir zone containing hydrocarbons. Values below the cutoff of v_{shale} , values above the cutoff in total porosity and effective porosity are interpreted as hydrocarbon zones. Based on information of cutoff values, the area of distribution of hydrocarbon zones in the Ekmai Formation is only concentrated in the northwest direction where the area of continuous distribution of hydrocarbons is to the north while in the south the distribution of hydrocarbons is only in certain areas. There are 3 recommended wells, namely X-1 well, X-2 well and X-3 well, which are located based on map overlays between structure time map, AI map and effective porosity map.*

Keywords : *AI Inversion, model based, reservoir, petrophysics, v_{shale} , porosity, cutoff, Akimeugah Basin, Ekmai Formation*