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AVO ANALYSIS FOR POROSITY DETERMINATION

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ABSTRACT

Under the umbrella of the ITB-PERTAMINA Research Grant (Geophysics), several software modules on reservoir characterization have been made. One of these is the AVO analysis for determination of reservoir porosity.

Based on the estimated location of a gas zone and guided by a conventional seismic section and well data, the porosity can be calculated by the AVO inversion technique. This method calculates a Poisson's ratio. This was done by application of the Marquardt Technique (1963) to the Shuey Equation (1985). From the results, the velocity of the S wave can be determined and the porosity can be calculated.

The application of AVO inversion analysis for the Cicauh Prospect shows that the gas zone has porosity in the range of 37-50%.

This research is a result of the theoretical study of the Shuey Equation and the relationship between porosity and elasticity. The result shows the widening corridor for AVO analysis applied to reservoir characterization. Comparison of the calculated result to the borehole data yields a very close correlation. This method can be applied laterally from the location of the well data. The method could be proposed for use on undrilled structures.

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