

**KARAKTERISASI RESERVOIR KARBONAT DENGAN MENGGUNAKAN METODE  
INVERSI IMPEDANSI AKUSTIK  
DAN ATRIBUT VARIANCE DI LAPANGAN "ARDIAGA", FORMASI KUJUNG,  
CEKUNGAN JAWA TIMUR UTARA**

**Handian Ardiaga Hendro Nugroho**

**10/300621/PA/13315**

Metode inversi impedansi akustik dan atribut seismik digunakan untuk mengetahui sebaran batuan karbonat, porositas dan fasies pengendapan daerah penelitian. Hasil dari analisis tersebut diharapkan mampu meningkatkan keberhasilan dalam penentuan daerah prospek hidrokarbon, sehingga upaya untuk memproduksi sumber daya energi yang berasal dari minyak dan gas bumi dengan lebih banyak dapat terus ditingkatkan.

Data yang digunakan dalam penelitian ini adalah data seismik 3D *Post – Stack*, data sumur dan data *checkshot*. Metode inversi yang digunakan dalam penelitian ini adalah *model – based inversion*. Hasil inversi yang dihasilkan berupa nilai impedansi akustik. Kemudian nilai tersebut digunakan untuk memprediksi nilai porositas. Atribut *variance* menghasilkan fitur – fitur geologi, lingkungan pengendapan dan fasies batuan.

Berdasarkan hasil penelitian, nilai impedansi akustik pada target *reservoir* karbonat [5.800 – 6.500 ((gr/cc)\*(m/s))] memiliki porositas neutron dengan rentang 28 – 33 %. Analisis atribut *variance* berhasil mengetahui bahwa lingkungan pengendapan daerah penelitian berupa *carbonate platform* pada fase transgresi berjenis *shelf* dengan fasies berupa *back-reef carbonate*. Hal ini didukung dengan jenis *gamma ray log* yang berbentuk *bell*. Hasil dari analisis terintegrasi terhadap parameter – parameter tersebut dikorelasikan dengan metode peluang untuk menghasilkan lokasi sumur pengembangan. Sumur AA dan AB direkomendasikan sebagai sumur pengembangan berikutnya berdasarkan analisis terintegrasi tersebut.

**Kata kunci: inversi impedansi akustik, atribut variance, porositas, fasies, sumur pengembangan**

**ABSTRACT**

***CARBONATE RESERVOIR CHARACTERIZATION USING ACOUSTIC IMPEDANCE  
INVERSION METHOD AND VARIANCE ATTRIBUTE  
IN "ARDIAGA" FIELD, KUJUNG FORMATION,  
NORTH EAST JAVA BASIN***

**Handian Ardiaga Hendro Nugroho**

**10/300621/PA/13315**

*Acoustic impedance inversion and seismic attribute method are used to know the carbonate rocks distribution, porosity, depositional environment and its associated facies in the target area. The results of this analysis are expected to improve the success in determining hydrocarbon prospect area, so, the efforts to produce more energy resources from oil and gas can be well-improved.*

*The data which are used in this research are 3D post stack seismic data, well data and checkshot. Seismic inversion method which is used in this research is model based inversion. The result of the inversion is acoustic impedance value. Then, this value is used to estimate the porosity value. Variance attribute succeeded to show geologic features throughout carbonate area, depositional environment and its associated facies.*

*The results show that the range of resulted acoustic impedance in the carbonate reservoir [5.800 – 6.500 ((gr/cc)\*(m/s))] has neutron porosity value between 28 – 33 %. Based on variance attribute analysis, it is known that depositional environment of the area is carbonate platform built in transgression phase, belonging to carbonate shelf, which has back reef carbonate facies as its associated facies. These results are endorsed by the bell shape of gamma ray log response in both HM-1 and HM-4 well. The results of integrated analysis to those parameters are correlated by using probability theory to get the next development wells. AA well and AB well are recommended as the next development wells based on that integrated analysis.*

***Keyword: acoustic impedance inversion, variance attribute, porosity, facies, development well***