

# Aplikasi rock physics dan inversi simultan untuk karakterisasi reservoir secara kuantitatif studi kasus lapangan rote = Application of rock physics and simultaneous inversion for quantitative reservoir characterization a study case for rote field

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## Abstrak

### [<b>ABSTRAK</b><br>

Analisa rock physics dilakukan untuk memberikan gambaran tentang hubungan antara properti fisis batuan dengan respon gelombang seismik yang menjalar melaluinya. Tesis ini merupakan sebuah studi kasus pada lapangan Rote, yang membahas tentang pengaplikasian rock physics sebelum melakukan karakterisasi reservoir dengan metode inversi simultan untuk mendapatkan informasi sebaran litologi dan fluida. Hasil pemodelan AVO menunjukkan bahwa nilai gradien amplitudo dari reservoir dengan saturasi hidrokarbon gas lebih tinggi daripada reservoir dengan saturasi minyak. Analisa sensitivitas pada data sumur menunjukkan bahwa atribut impedansi akustik dan terutama VP/VS dapat digunakan untuk identifikasi litologi, sedangkan identifikasi fluida sulit dilakukan karena separasi yang minim. Hasil inversi atribut VP/VS kemudian digunakan untuk mendeliniasikan persebaran reservoir (nilai VP/VS rendah).

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Rock physics analysis is performed in aim to describe the relationship between rock physical property and seismic wave response which travels through it. This thesis is a case study done in Rote field, which discuss the application of rock physics prior to characterizing the reservoir with simultaneous inversion to obtain lithology distribution as well as fluid prediction. AVO modeling results shows that the amplitude gradient of the gas saturated reservoir yields higher values compared to the brine saturated reservoir. Sensitivity analysis at wells shows that the acoustic impedance and mainly VP/VS are useful attributes to be used in identifying lithologies, meanwhile fluid discrimination is difficult to be performed as the separation is minimal. The VPVS ratio attribute was then used to delineate reservoir distribution., Rock physics analysis is performed in aim to describe the relationship between rock physical property and seismic wave response which travels through it. This thesis is a case study done in Rote field, which discuss the application of rock physics prior to characterizing the reservoir with simultaneous inversion to obtain lithology distribution as well as fluid prediction. AVO modeling results shows that the amplitude gradient of the gas saturated reservoir yields higher values compared to the brine saturated reservoir. Sensitivity analysis at wells shows that the acoustic impedance and mainly VP/VS are useful attributes to be used in

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