

ABSTRAK

PREDIKSI TEKANAN PORI MENGGUNAKAN METODE YAN DAN HAN BERDASARKAN KECEPATAN SEISMIK PADA LAPANGAN “V” CEKUNGAN KUTAI

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Overpressure merupakan tekanan abnormal dimana tekanan pori melebihi tekanan normal. *Overpressure* dapat menyebabkan *blow out*. Lapangan “V” yang terdapat di Cekungan Kutai diindikasikan adanya potensi keberadaan zona *overpressure* dari beberapa penelitian dan hasil pengeboran. Sehingga, prediksi tekanan pori pada lapangan ini perlu dilakukan penentuan berat lumpur agar tidak terjadi *blow out*. Pada penelitian ini prediksi tekanan pori dilakukan untuk *drilling hazard* yaitu penentuan berat lumpur agar tidak terjadi *blow out*. Prediksi tekanan pori dilakukan menggunakan metode Yan dan Han dengan data utama seismik 3D PSDM dan data log. Dan prediksi tekanan pori diperoleh dari hasil kedua data yaitu kecepatan seismik inisial model dan inversi seismik. Kecepatan seismik yang didapat digunakan untuk transformasi kecepatan menjadi tekanan efektif menggunakan persamaan Yan dan Han. Persamaan Yan dan Han memiliki *parameter fitting* yang nilainya sangat dipengaruhi oleh kecepatan. Kemudian prediksi tekanan pori didapatkan dari persamaan Terzaghi yaitu tekanan overburden dikurang tekanan efektif dan didapatkan nilai prediksi pori yang mendekati nilai tekanan hasil pengukuran MDT. Tekanan pori hasil kecepatan inisial model *p wave* dan inversi seismik lebih akurat dibanding kecepatan hasil inversi seismik. Berat lumpur yang digunakan pada kedalaman 860 m adalah 9-19 ppg.

Kata Kunci: Tekanan Pori, *Overpressure*, kecepatan inisial model *p wave*,
kecepatan hasil inversi seismik, persamaan Yan dan Han

ABSTRACT

PORE PRESSURE PREDICTION USING YAN AND HAN METHOD BASED ON SEISMIC VELOCITY AT “V” FIELD KUTAI BASIN

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Overpressure was an abnormal pressure in which the pore pressure exceeds the normal pressure. Overpressure can cause blow out. The "V" field located in Kutai Basin was indicated as the potential existence of overpressure zones by several studies and drilling results. Thus, the prediction of pore pressure in this field is necessary to determine the mud weight in order to avoid blow out. In this study pore pressure prediction was done for drilling hazard by determining the mud weight to avoid blow out. Pore pressure prediction was done using the Yan and Han method with seismic 3D PSDM data and log data. And pore pressure prediction was obtained from the results of both data, that was the seismic velocity from initial model and seismic inversion. The obtained seismic velocity was used for velocity transformation into effective pressure using the Yan and Han equation. The Yan and Han equations have fitting parameters whose values were heavily influenced by the velocity. Then the pore pressure prediction was obtained from the Terzaghi equation by the overburden pressure with the effective pressure, and we obtained pore prediction value near the value of MDT measurement pressure. The pore pressure resulting from the p wave initial model velocity was more accurate than the velocity derived from seismic inversion. The mud weight used at a depth of 860 m was 9-19 ppg.

Keywords: Pore pressure, overpressure, velocity of p wave initial model, velocity derived from seismic inversion, Yan and Han equation