INTISARI

ANALISIS PETROFISIKA DAN PERHITUNGAN VOLUMETRIK CADANGAN HIDROKARBON PADA RESERVOAR BATUPASIR FORMASI LAKOTA, LAPANGAN TEAPOT DOME, CEKUNGAN POWDER RIVER, WYOMING, AMERIKA SERIKAT

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Analisis petrofisika dan perhitungan volumetrik cadangan hidrokarbon telah dilakukan pada reservoar batupasir Formasi Lakota di lapangan Teapot Dome, Wyoming, Amerika Serikat. Parameter petrofisika yang dianalisis meliputi volume serpih, porositas, saturasi air dan permeabilitas. Interpretasi data seismik 3D Teapot Dome akan dihubungkan dengan analisis petrofisika untuk menghitung volume cadangan hidrokarbon pada Formasi Lakota.

Analisis petrofisika dilakukan dengan perangkat lunak *Paradigm Geolog 7.0.*. Interpretasi data seismik 3D diawali dengan proses *Well to Seismic Tie, picking* sesar dan horison lapisan atas serta bawah Formasi Lakota agar diperoleh peta struktur dalam domain waktu. Konversi domain waktu menjadi domain kedalaman dilakukan dengan persamaan linier dari grafik data *checkshot.* Hasil perhitungan volume *bulk* batupasir Formasi Lakota yang diperoleh digunakan untuk perhitungan volumetrik cadangan hidrokarbon.

Hasil penelitian menunjukkan bahwa reservoir batupasir Formasi Lakota memiliki rata-rata volume serpih 7,12%, porositas efektif 16,12%, saturasi air 38,28%, saturasi hidrokarbon 61,72% dan permeabilitas 66,75 mD. Parameter tersebut menunjukkan bahwa reservoar batupasir Formasi Lakota memiliki kualitas yang baik. Volume cadangan hidrokarbon pada reservoar batupasir Formasi Lakota yang diperoleh dari hasil perhitungan adalah 10,6 MMBO.

Kata kunci : analisis petrofisika, Formasi Lakota, interpretasi, seismik 3D, Teapot Dome, volume hidrokarbon.

ABSTRACT

PETROPHYSICAL ANALYSIS AND HYDROCARBON VOLUMETRIC CALCULATION ON LAKOTA SANDSTONE FORMATION, TEAPOT DOME FIELD, POWDER RIVER BASIN, WYOMING, UNITED STATES OF AMERICA

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Petrophysical analysis and hydrocarbon volumetric calculation had been done on the Reservoir Sandstone of Lakota Formation in the Teapot Dome Field, Wyoming, United States. Petrophysical parameters have been analyzed are shale volume, porosity, water saturation and permeability. The 3D seismic data interpretation of Teapot Dome had been correlated with petrophysical analysis in order to calculate the volume of hydrocarbon in the Lakota Sandstone Formation.

Petrophysical analysis was performed by Paradigm Geolog 7.0 software. The 3D seismic data interpretation was started with the Well to Seismic Tie process, picking fault and horizon layers above and below the Lakota Formation to obtain a structural map in the time domain. Time domain conversion to depth domain had been performed with a linear equation from checkshot data charts. The calculation of Lakota Formation bulk volume was able to used for hydrocarbon volumetric calculation on Lakota Sandstone Formations.

The results showed that the Lakota Formation has an average volume of shale 7.12%, 16.12% effective porosity, 38.28% water saturation, 61.72% hydrocarbon saturation and 66.75 mD permeability. These parameters indicate that the Lakota Sandstone Formations has a good quality as a reservoars. The volume of hydrocarbon in place are obtained from the calculation is 10.6 MMBO.

Keywords: hydrocarbon volume, interpretation of 3D seismic, Lakota Formations, petrophysical analysis, Teapot Dome.