ABSTRAK

DELINIASI ZONA RESERVOAR HIDROKARBON BERDASARKAN DATA LOG DAN KORELASI LITOSTRATIGRAFI DARI 99 SUMUR TUA BELANDA DI LAPANGAN "KW" CEKUNGAN JAWA TIMUR UTARA

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Di Indonesia terdapat beberapa titik sumur minyak tua yang berproduksi sejak zaman Belanda yang salah satunya yaitu Lapangan KW. Lapangan KW merupakan lapangan migas tua yang memiliki titik sumur terbanyak. Oleh sebab itu maka perlu dilakukan studi lanjutan di Lapangan KW dengan mendeliniasi zona reservoar hidrokarbon menggunakan data log dan korelasi litostratigrafi. Data yang digunakan dalam penelitian ini merupakan data sumur tua Belanda dengan jumlah 99 sumur yang mencakup wilayah administrasi Kabupaten Bojonegoro dan Tuban dengan luas area penelitian 35.778.600 m^2. Titik sumur tersebar pada Formasi Wonocolo dan Formasi Ledok. Berdasarkan hasil korelasi litostratigrafi maka didapatkan 18 lapisan batuan yang terkorelasi dengan litologi napal pasiran, lempung pasiran, lempung napalan, batu lempung, napal, batupasir, dan pasir gampingan. Berdasarkan analisis hasil korelasi litostratigrafi dengan data sumur maka didapatkan 5 zona reservoar hidrokarbon dengan 3 lapisan pasir gampingan yang memiliki nilai porositas 19% dan permeabilitas 1791 mD dan 2 lapisan batupasir dengan nilai porositas 19% dan permeabilitas 1342 mD. Hasil analisis ini menunjukkan bahwa kualitas reservoar hidrokarbon pada Lapangan KW memiliki kualitas porositas baik dan permeabilitas istimewa. Berdasarkan hasil pemodelan 2D dan 3D didapatkan bahwa zona reservoar hidrokarbon total memiliki elevasi kedalaman sebesar 1.536 m dan ketebalan sebesar 1.071 m serta nilai volume bulk sebesar 4,69 x 10^9 m^3.

Kata Kunci: Deliniasi, Korelasi Litostratigrafi, Reservoar, Sumur Tua Belanda

ABSTRACT

DELINIATION OF HYDROCARBON RESERVOAR ZONES BASED ON LOG DATA AND LITOSTRATIGRAPHIC CORRELATION FROM 99 OLD DUTCH WELLS IN THE "KW" FIELD OF THE NORTH EAST JAVA BASIN

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In Indonesia, there are several old oil wells that have been producing since the Dutch era, one of which is the KW Field. The KW field is an old oil and gas field that has the most well points. Therefore, it is necessary to carry out further studies in the KW Field by delineating the hydrocarbon reservoir zone using log data and lithostratigraphic correlation. The data used in this research is old Dutch well data with a total of 99 wells covering the administrative areas of Bojonegoro and Tuban Regencies with a research area of 35.778.600 m^2. The well points are spread across the Wonocolo Formation and Ledok Formation. Based on the results of lithostratigraphic correlation, 18 rock layers were found that were correlated with the lithology of sandy marl, sandy clay, marl clay, claystone, marl, sandstone and calcareous sand. Based on the analysis of lithostratigraphic correlation results with well data, 5 hydrocarbon reservoir zones were obtained with 3 layers of calcareous sand which had a porosity value of 19% and a permeability of 1791 mD and 2 layers of sandstone with a porosity value of 19% and a permeability of 1342 mD. The results of this analysis show that the quality of the hydrocarbon reservoir in the KW Field has good porosity and excellent permeability. Based on the results of 2D and 3D modeling, it was found that the total hydrocarbon reservoir zone has a depth elevation of 1,536 m and a thickness of 1.071 m and a bulk volume value of 4,69 x 10^9 m^3.

Keywords: Deliniation, Lithostratigraphic Correlation, Reservoir, Old Dutch Wells