

INTISARI

PENENTUAN SUMUR PENGEMBANGAN BERDASARKAN VOLUME SERPIH, POROSITAS EFEKTIF, SATURASI AIR EFEKTIF, PETA STRUKTUR, DAN RMS AMPLITUDO PADA FORMASI BEKASAP DI LAPANGAN “KHAS” CEKUNGAN SUMATERA TENGAH

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Penelitian ini dilakukan sebagai salah satu upaya dalam meningkatkan produksi Lapangan “Khas” yang terletak di Cekungan Sumatera Tengah, Riau. Target Penelitian merupakan reservoir batupasir yang dibagi menjadi beberapa zona reservoir dan terletak di Formasi Bekasap yang termasuk ke dalam Kelompok Pematang. Analisis yang dilakukan berupa analisis petrofisika dan seismik yang bertujuan untuk mengetahui persebaran reservoir dan digunakan dalam penentuan lokasi sumur pengembangan guna mendapatkan produksi hidrokarbon yang optimal.

Analisis petrofisika dilakukan berdasarkan data dari 8 log sumur dan didapatkan hasil berupa nilai volume serpih, porositas efektif, dan saturasi air efektif, serta perkiraan kedalaman dan ketebalan tiap zona reservoir pada tiap sumur. Analisis Seismik dilakukan berdasarkan data Seismik 3D *post-stack*, data log sumur, dan data marker tiap sumur yang kemudian didapatkan jenis struktur yang berkembang di sekitar formasi target dan persebaran zona reservoir secara lateral berdasarkan peta struktur kedalaman dan peta RMS Amplitudo.

Hasil penelitian menunjukkan bahwa terdapat 4 zona reservoir yaitu reservoir A,B,C, dan D berada pada struktur antiklin asimetris tersesarkan dengan arah Barat Laut-Tenggara dan memiliki kisaran nilai parameter reservoir berupa volume serpih, porositas efektif, dan saturasi air efektif secara berurutan pada reservoir A adalah sebesar 4-16%; 20-27%; 30-50%, reservoir B : 9-24%; 18-23%; 22-34%, reservoir C : 12-34%; 18-20%; 25-56%, reservoir D : 9-28%;17-26%; 38-54%. Berdasarkan nilai tersebut ditambah dengan peta struktur kedalaman dan peta RMS Amplitudo ditentukan posisi 4 sumur pengembangan pada Lapangan “Khas” yaitu sumur KHAS9 (koordinat UTM 691028;69408), sumur KHAS10 (koordinat UTM 69029,4;69821,6) sumur KHAS11 (koordinat UTM 691360,5;69377) dan sumur KHAS12 (koordinat UTM 691116,8;68951,8).

Kata-kata kunci : Cekungan Sumatera Tengah, Formasi Bekasap, volume serpih, porositas efektif, saturasi air efektif, reservoir, atribut RMS amplitudo.

ABSTRACT

DEVELOPMENT WELL PLACEMENT BASED ON SHALE VOLUME, EFFECTIVE POROSITY, EFFECTIVE WATER SATURATION, STRUCTURE MAP, AND RMS AMPLITUDE OF BEKASAP FORMATION ON “KHAS” FIELD, CENTRAL SUMATRA BASIN

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This research was conducted to increase production on “Khas” Field in the Central Sumatra Basin, Riau. Target of the research is sandstone reservoir located in Bekasap Formation, part of Pematang Group and divided into several zones. The analysis consist of petrophysics and seismic analysis aimed to determine horizontal and vertical distribution of the reservoir in order to maximizing hydrocarbon potential.

Petrophysics analysis was done based on log data from 8 wells resulting in expected value of shale volume, effective porosity, and effective water saturation, as well as estimated depth and thickness of each reservoir zone in each well. Seismic analysis was done based on post-stack 3D seismic data, well log, and marker from each well resulting in type of structure that develops in the target formation and horizontal distribution of reservoir with the help from depth-structure map and RMS Amplitude map created from seismic data.

The results showed that there are 4 zone of reservoir, namely Reservoir A,B,C, and D located in the faulted assymetric anticline structure which has Northwest-Southeast direction, and have expected value of shale volume, effective porosity, and effective water saturation respectively 4-16%;20-27%; 30-50% in A reservoir, 9-24%; 18-23%; 22-34% in B reservoir, 12-34%; 18-20%; 25-56% in C reservoir, and 9-28%;17-26%; 38-54% in D reservoir. Based on these values and depth-structure map as well as RMS Amplitude map we can determine the placement of four developments well on “Khas” Field namely KHAS9 well (UTM coordinate 691028;69408), KHAS 10 well (UTM coordinate 69029,4;69821,6), KHAS 11 well (UTM coordinate 691360,5;69377), KHAS 12 well (UTM coordinate 691116,8;68951,8).

Keywords : Central Sumatra Basin. Bekasap Formation, shale volume, effective porosity, effective water saturation, reservoir, RMS amplitude attributes.