

INTISARI

PEMODELAN PROPERTI PETROFISIKA MENGGUNAKAN PENDEKATAN GEOSTATISTIKA DI LAPANGAN “IBU” CEKUNGAN SUMATERA SELATAN

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Lapangan “Ibu” merupakan lapangan pengembangan dengan prospek utama berupa gas yang terletak di Cekungan Sumatera Selatan. Lapangan “Ibu” memiliki 2 reservoir utama yang terletak di Formasi Baturaja untuk *area build up reef* dan Formasi Talang Akar untuk *area platform*. Di formasi tersebut terdapat dua zona prospek yaitu lapisan BRF di Formasi Baturaja dan lapisan I di Formasi Talang Akar. Proses pemodelan perlu dilakukan untuk melakukan pengembangan lapangan. Proses pemodelan berupa pemodelan *facies*, porositas efektif, dan saturasi air sebagai pertimbangan untuk pengembangan lapangan. Data seismik digunakan hingga proses pembuatan kerangka struktur model sedangkan data sumur digunakan sebagai isi model.

Pendekatan geostatistik yang digunakan adalah untuk data properti petrofisika (*continue*) digunakan *sequential Gaussian simulation* dan data *facies* (*discrete*) digunakan *sequential indicator simulation*. Pola sebaran data tersebut dikontrol oleh variogram dan *trend data* sehingga memiliki kelebihan untuk mempertahankan distribusi data, nilai data, dan variasi lokal.

Data seismik menunjukkan sesar turun yang berkembang di daerah penelitian, dengan orientasi barat daya-timur laut yang merupakan sesar minor dari Cekungan Sumatera Selatan yang tegak lurus dengan sesar mayor berarah barat laut-tenggara. Nilai porositas efektif rata-rata yang diperoleh di BRF dan I berkisar dari 0 hingga 0.4, sedangkan nilai saturasi air berkisar dari 0 hingga 0.8. Pola persebaran porositas efektif dan saturasi air, menunjukkan porositas efektif yang cukup tinggi dan saturasi air yang rendah berada di sekitar *area build up reef* dimana terdapat sumur *exiting* dan di dekat sumur SRS-27. Area pengembangan kedepan berada di sekitar sumur SRS-27 tersebut dan pendalaman hingga Formasi Talang Akar di *area build up reef*.

Kata kunci: *facies*, porositas efektif, saturasi air, geostatistika, *sequential indicator simulation*, *sequential Gaussian simulation*

ABSTRACT

***PETROPHYSICAL PROPERTY MODELLING USING GEOSTATISTICS
APPROACH AT "IBU" FIELD SOUTH SUMATERA BASIN***

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"Ibu" field is the development field with gas prospect which is located in the South Sumatra Basin. "Ibu" field has two main reservoirs located in the Baturaja Formation in build-up reef area and Talang Akar Formation in the platform area. In that formation, there are two prospect zones, BRF layer in Baturaja Formation and I layer in Talang Akar Formation. Modeling needs to be done to develop the field. Facies, effective porosity and water saturation model used as consideration for the field development. Seismic data was used to process of making a structure framework model while wells data were used as the model contents.

The geostatistics approach for petrophysical properties's (continue) was done using sequential Gaussian simulation and for facies (discrete) data distribution was done using sequential indicator simulation. The distribution data patterns were controlled by variogram and trend data, therefore it has the advantages to maintaining the data distribution, data values, and local variations.

Seismic data showed normal fault that has been developing in the research area, with the southwest-northeast striking, which is a minor fault of the South Sumatra Basin straight to the major fault northwest-southeast. The average of effective porosity value was obtained in the BRF and I prospect zones ranged from 0 to 0.4, while the water saturation values range from 0 to 0.8. Based on the distribution effective porosity and water saturation, the effective porosity value was quite high and the water saturation was low in the build-up reef area which where exiting well and SRS-27 well existed. The future development area is around the SRS-27 well and deepening until Talang Akar Formation in the build-up reef area.

Key words: porosity, water saturation, geostatistics, sequential indicator simulation, sequential Gaussian simulation