

SARI

Kandidat utama reservoir yang dijadikan eksplorasi pada daerah penelitian merupakan Formasi Baturaja, Cekungan Sumatera Selatan, yang merupakan batuan karbonat bioklastik yang terbentuk pada kala Awal Miosen (Bishop, 2001). Analisis fasies menunjukkan bahwa Formasi Baturaja (BRF) daerah penelitian terdiri dari *bioclastic wackestone*, *bioclastic packstone*, *larger foraminiferal packstone*, dan *coralline rudstone* yang terendapkan pada lingkungan pengendapan *lagoon-back reef* dengan arah sedimentasi ke arah Timur Laut. Proses diagenesis yang dapat diamati ialah neomorfisme, pelarutan, sementasi, dan kompaksi. Batuan karbonat bersifat heterogen dan kompleks akibat rentan terhadap diagenesis sehingga distribusi reservoir karbonat, baik secara vertikal maupun lateral sulit diprediksi. Dengan demikian, faktor yang mengontrol properti reservoir karbonat tidak hanya karakteristik pengendapan, tetapi juga proses diagenesis yang terjadi. Maka pada penelitian kali ini, dilakukan pendekatan menggunakan konsep *rock type* metode R35 Winland dalam mengestimasi nilai permeabilitas reservoir. Metode ini didasarkan pada hubungan empirik porositas, permeabilitas dan *pore throat* yang didapat pada 35% saturasi merkuri. Analisis *rock type* menggunakan data log sumur dan data batuan inti. Berdasarkan data hasil pengukuran rutin (*Routine Core Analysis*), batuan inti dikelompokkan menjadi enam *rock type*. *Rock type* 1 merupakan *rock type* yang memiliki properti batuan paling baik dan *rock type* 6 merupakan *rock type* yang memiliki properti batuan paling buruk. Hasil estimasi permeabilitas menggunakan konsep *rock type* memiliki nilai koefisien koreasi terhadap data batuan inti sebesar 0,601 dan 0,5609. Untuk mendapatkan penyebaran lateral dari *rock type* serta porositas dan permeabilitas guna mengetahui penyebaran reservoir yang baik, dilakukan pemodelan geostatistik. Dalam tahapan pemodelan, Formasi Baturaja daerah penelitian dibagi menjadi dua zona, yaitu Zona *Upper* BRF dan Zona *Lower* BRF. Zona *Upper* BRF merupakan zona reservoir dan Zona *Lower* BRF merupakan zona non-reservoir. Hasil pemodelan tersebut menunjukkan bahwa area Timur Laut dari daerah penelitian memiliki kualitas reservoir yang semakin baik. Hal ini berkaitan dengan lingkungan pengendapan yang berkembang ke arah Timur Laut ialah *back reef* yang mana kandungan *mud*-nya semakin berkurang.

Kata Kunci: Formasi Baturaja, *Rock Type*, R35 Winland.

ABSTRACT

The main candidate reservoir which was explored in the research area is in Baturaja Formation, South Sumatra Basin. This reservoir consists bioclastic carbonate rocks that was formed in Early Miocene (Bishop, 2011). Facies analysis showed Baturaja Formation (BRF) in this research area consists of bioclastic wackestone, bioclastic packstone, larger foraminiferal packstone, and coralline rudstone which were deposited in lagoon-back reef depositional environment with northeastward sedimentation flow. Diagenesis process which were observed are neomorphism, dissolution, cementation, and compaction. Carbonate rocks are heterogeneous and complex because of its vulnerability of diagenesis, causing carbonate reservoir distribution difficult to predict, vertically or even horizontally. With that being said, the factors that control the carbonate reservoir properties is not only the depositional characteristics, but also the diagenesis process. In this research, a rock type concept with R35 Winland method is conducted to estimate the reservoir permeability value. This method is based on the empiric correlation of porosity, permeability, and pore throat that was obtained in 35% mercury saturated condition. Rock type analysis was conducted by using log well data and also core data. Based on the results of routine measurements (Routine Core Analysis), the cores are grouped into six rock types. Rock type 1 is the type rock that has the best rock properties, and rock type 6 has the worst rock properties among all. The results from permeability estimation using rock type method shows a correlated coefficient value to the core data which is 0,601 and 0,5609. Geostatistic modeling was conducted to obtain the horizontal distribution of the rock type as well as the porosity and permeability to determine a good reservoir distribution. In modeling phase, Baturaja Formation of the research area is divided into two zones which are Upper BRF Zone and Lower BRF Zone. Upper BRF Zone is the reservoir zone and Lower BRF Zone is the non-reservoir zone. The results of modeling shows that the northeastern part of the research area has a better reservoir quality. This can be linked with the depositional environment that was formed northeastward is back reef which has depleting mud.

Keywords: Baturaja Formation, Rock Type, R35 Winland