

SARI

Salah satu lapangan yang berproduksi di Formasi Baturaja, Cekungan Jawa Barat Utara yaitu lapangan “SAL” yang sebagian besar tersusun atas batuan karbonat pada Kala Miosen Awal. Produksi hidrokarbon di lapangan tersebut masih belum optimal, sehingga perlu dilakukan karakterisasi reservoir batuan karbonat untuk memaksimalkan proses produksi dan pengembangan sumur baru. Reservoir karbonat di daerah penelitian memiliki heterogenitas yang cukup kompleks, hal ini disebabkan oleh proses yang terjadi saat pengendapan (sedimentasi) maupun setelah pengendapan (diagenesis). Untuk mengetahui kedua faktor tersebut, dilakukan analisis litofasies, fasies pengendapan, model konseptual geologi dan properti batuan. Data yang digunakan adalah data *core*, petrografi, *well log*, dan seismik. Dari analisis sedimentasi, ditentukan litofasies pada Formasi Baturaja daerah penelitian berupa *mudstone*, *wackestone*, *packstone*, *grainstone*, *floatstone*, *rudstone*, *bafflestone*, *framestone*, *bindstone*, *calcareous sandstone*, *calcareous siltstone* dan *claystone*. Fasies pengendapan berada pada *inter-reef lagoon*, *inter-reef*, *near reef*, *reef*, *reef mound* dan *shelf*. Model konseptual geologi daerah penelitian tersusun atas *patch reef complex* yang berada pada *ramp carbonate platform*. Dari analisis petrografi, dapat diketahui bahwa lingkungan diagenesis yang berperan pada daerah penelitian adalah *marine phreatic* – *shallow burial* – *mixing* – *meteoric freshwater phreatic*, dengan proses diagenesis yang terjadi berupa pelarutan, mikritisasi, neomorfisme, dolomitisasi, *replacement*, sementasi dan kompaksi. Berdasarkan data *RCAL*, fasies yang memiliki karakter properti yang paling baik (menurut klasifikasi Koesoemadinata, 1980) yaitu fasies *grainstone* dan *boundstone*. Nilai porositas dan permeabilitas pada fasies *grainstone* adalah 19,2 – 23,5% (*good* – *very good*) dan 2,15 – 5,75 mD (*tight* – *fair*). Sedangkan, fasies *boundstone* memiliki nilai porositas dan permeabilitas 16,9 – 20,8% (*good* – *very good*) dan 0,94 – 1,61 mD (*tight*). Pembuatan model konseptual geologi dilakukan untuk mengetahui persebaran zona prospek secara lateral yang berada pada interval kedalaman yang memiliki litofasies penyusun berupa *grainstone* dan *boundstone* pada zona A, B dan C yang berada disekitar sumur SAL-2, SAL-2ST, SAL-3, SAL-6 dan SAL-6A.

Kata kunci: Formasi Baturaja, Reservoir Karbonat, Litofasies, Properti, Diagenesis

ABSTRACT

One of the producing fields in Baturaja Formation, North West Java Basin is "SAL" field, which is mostly consists of carbonate rocks in the Early Miocene Period. Hydrocarbon production in the study area is not yet optimal, so it's necessary to characterize carbonate rock reservoirs to maximize the production process and development of new wells. Carbonate reservoirs in the study area have a quite complex heterogeneity caused by the processes that occur during sedimentation and diagenesis. In order to find out those two factors, analyses conducted in this study consist of lithofacies, depositional facies, geological conceptual model and rock properties. The data used are core, petrographic, well log, and seismic data. From the sedimentation analysis, lithofacies determined in the study area consists of mudstone, wackestone, packstone, grainstone, floatstone, rudstone, bafflestone, framestone, bindstone, calcareous sandstone, calcareous siltstone and claystone. The depositional facies are on inter-reef lagoon, inter-reef, near reef, reef, reef mound and shelf. Geological conceptual model of the study area is composed of patch reef complexes that located on a ramp carbonate platform. From the petrographic analysis, it can be concluded that the diagenetic environment which takes place in the study area is marine phreatic - shallow burial - mixing - meteoric freshwater phreatic, with dissolution, micritization, neomorphism, dolomitization, replacement, cementation and compacting processes. Based on RCAL data, facies that have the best property character (according to Koesoemadinata classification, 1980) are grainstone and boundstone facies. The porosity and permeability values in the grainstone facies are 19,2 – 23,5% (good - very good) and 2.15 - 5.75 mD (tight - fair). Meanwhile, boundstone facies have porosity and permeability values of 16.9 - 20.8% (good - very good) and 0.94 - 1.61 mD (tight). Geological conceptual modeling is conducted to determine the lateral distribution of prospect zones at depth intervals that have constituent lithofacies of grainstone and boundstone in zones A, B and C which are around wells SAL-2, SAL-2ST, SAL-3, SAL-6 and SAL-6A.

Keywords: Baturaja Formation, Carbonate Reservoir, Lithofacies, Property, Diagenetic