

## SARI

### KARAKTERISASI RESERVOAR 'J' FORMASI BALIKPAPAN, LAPANGAN 'INN', BLOK SANGA SANGA, CEKUNGAN KUTAI

Delta Mahakam sebagai salah satu delta besar di Indonesia diketahui memiliki lapangan-lapangan penghasil minyak dan gas yang terbukti sudah berproduksi. Studi tentang karakterisasi reservoir terus dikembangkan untuk mencari zona reservoir bagus yang diendapkan pada lingkungan pengendapan geologi tertentu. Penelitian ini dilakukan di Reservoir 'J', Formasi Balikpapan, Lapangan 'INN', Blok Sanga Sanga, Cekungan Kutai. Tujuan penelitian ini meliputi penentuan fasies litologi, analisis lingkungan pengendapan, serta melakukan perhitungan nilai-nilai petrofisika (*Vshale*, porositas, permeabilitas dan saturasi air). Data yang digunakan adalah data *wireline log* dan *mud log*. Metode untuk menentukan lingkungan pengendapan menggunakan analisis elektrofases. Perhitungan petrofisika untuk permeabilitas menggunakan metode Coates-Dumanoir, sedangkan untuk saturasi air menggunakan persamaan Indonesia. Hasil penelitian menunjukkan bahwa litofases Reservoir 'J' ke arah timurlaut berkembang sebagai batupasir kasar di bagian bawah dan batupasir halus di bagian atas sebagai fasies *distributary channel* dan batupasir halus di bagian bawah serta batupasir kasar di bagian atas sebagai fasies *crevasse splay* sedang diendapkan pada lingkungan *lower delta plain*, sedangkan ke arah baratdaya berubah menjadi litologi batupasir halus di bagian bawah dan batupasir kasar di bagian atas sebagai fasies *shoreface* serta batupasir kasar di bagian bawah dan batupasir halus di bagian atas sebagai fasies *foreshore* diendapkan pada lingkungan laut dangkal. Properti petrofisika batuan Reservoir 'J' pada fasies *distributary channel* memiliki nilai *Vshale* rata-rata 46%, porositas rata-rata 3%, permeabilitas rata-rata 0,6 mD, dan saturasi air rata-rata 74%. Pada fasies *crevasse splay* memiliki nilai *Vshale* rata-rata 49%, porositas rata-rata 4%, permeabilitas rata-rata 0,28 mD, dan saturasi air rata-rata 80%. Pada fasies *foreshore* memiliki nilai *Vshale* rata-rata 45%, porositas rata-rata 3%, permeabilitas rata-rata 0,17 mD, dan saturasi air rata-rata 68%. Pada fasies *shoreface* memiliki nilai *Vshale* rata-rata 58%, porositas rata-rata 2%, permeabilitas rata-rata 0,24 mD, dan saturasi air rata-rata 77%.

**Kata kunci :** *karakterisasi reservoir, lingkungan pengendapan delta, laut dangkal, petrofisika reservoir Formasi Balikpapan.*

## ABSTRACT

### **'J' RESERVOAR CHARACTERIZATION BALIKPAPAN FORMATION, 'INN' FIELD, SANGA SANGA BLOCK, KUTAI BASIN**

*Delta Mahakam, as one of the major deltas in Indonesia, is known to have proven oil and gas producing fields. The study of reservoir characterization continues to be developed to find a good reservoir zone that is deposited in a certain geological depositional environment. This research was conducted at Reservoir "J", Balikpapan Formation, Field "INN", Sanga Sanga Block, Kutai Basin. The objectives of this study include determining lithological facies, analyzing the depositional environment, and calculating petrophysical values ( $V_{shale}$ , porosity, permeability and water saturation). The data used are wireline log and mud log data. The method for determining the depositional environment uses electrofacies analysis. Petrophysical calculations for permeability use the Coates-Dumanoir method, while for water saturation the Indonesian equation is used. The results showed that the lithofacies reservoir 'J' to the northeast developed as coarse sandstones at the bottom and fine sandstones at the top as distributary channel facies and fine sandstones at the bottom and coarse sandstones at the top as crevasse splay facies being deposited in the lower environment. delta plain, while to the southwest it turns into lithology of fine sandstones at the bottom and coarse sandstones at the top as shoreface facies and coarse sandstones at the bottom and fine sandstones at the top as foreshore facies deposited in a shallow marine environment. Petrophysical properties of reservoir 'J' rock on the distributary channel facies have an average  $V_{shale}$  value of 46%, an average porosity of 3%, an average permeability of 0.6 mD, and an average water saturation of 74%. The crevasse splay facies have an average  $V_{shale}$  value of 49%, an average porosity of 4%, an average permeability of 0.28 mD, and an average water saturation of 80%. The foreshore facies has an average  $V_{shale}$  value of 45%, an average porosity of 3%, an average permeability of 0.17 mD, and an average water saturation of 68%. The shoreface facies have an average  $V_{shale}$  value of 58%, an average porosity of 2%, an average permeability of 0.24 mD, and an average water saturation of 77%.*

**Keywords :** *reservoir characterization, delta depositional environment, shallow marine, petrophysic reservoir Balikpapan Formation.*



UNIVERSITAS  
GADJAH MADA

**KARAKTERISASI RESERVOAR &quot;J&quot; FORMASI BALIKPAPAN, LAPANGAN  
&quot;INN&quot;, BLOK SANGA  
SANGA, CEKUNGAN KUTAI**

INTANIA NURMARA N, Ir. Jarot Setyowiyoto, M.Sc., Ph.D., IPU, ASEAN Eng.  
Universitas Gadjah Mada, 2021 | Diunduh dari <http://etd.repository.ugm.ac.id/>