

SARI

ROCK TYPING RESEVOAR BATUGAMPING TUBAN, LAPANGAN ALFATH, CEKUNGAN JAWA TIMUR UTARA

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Lapangan ALFATH yang terletak di Cekungan Jawa Timur Utara, menghasilkan hidrokarbon, berupa minyak yang berasal dari Formasi Tuban. Karakterisasi propertifasies dan diagenesis serta *rock typing* diharapkan memberikan hasil yang lebih baik dalam melihat karakteristik reservoir karbonat dan potensinya sehingga pengembangan Lapangan ALFATH dapat lebih efisien.

Formasi Tuban di lapangan ALFATH tersusun oleh 8 litofasies (berdasarkan data batuaninti) atau 7 litofasies (berdasarkan data image log) yang diendapkan pada lingkungan *shallow platform interior, reef margin, upper slope, lower slope* hingga *deep basin* pada suatu *build up reef*.

Nilai m yang dihasilkan berdasarkan perhitungan Formation Factor transform dan persamaan eksponen sementasi sesuai tipe pori, reservoir Lapangan ALFATH mempunyai nilai $m < 2$ untuk reservoir dengan tipe porositas *connected vuggy* dan *open fracture*, sedangkan reservoir dengan $m > 2$ untuk tipe pori *stylolite, closed fracture, isolated vug*.

Berdasarkan data *core* (sumur ALFATH-2 dan ALFATH-15) dan menggunakan metode Modifikasi Kazeny-Carmen, yaitu dengan prinsip nilai gradient *Flow Zone Indicator (FZI)* yang sama akan merefleksikan jenis *Rock Type (RT)* dan klaster *flow unit (FU)* yang sama, dihasilkan 5. FU1 adalah flow unit yang terbaik dengan nilai FZI > 4 (mean porositas 16 % dan permeabilitas 550 mD), FU 2 dengan nilai FZI antara 3.2 – 4 (mean porositas 21 % dan permeabilitas 295 mD), FU 3 nilai FZI antara 2 – 3.2 (mean porositas 17 % dan permeabilitas 100 mD), FU 4 nilai FZI antara 1.3 – 2 (mean porositas 11 % dan permeabilitas 16 mD), dan FU 5 adalah flow unit yang terjelek dengan nilai FZI < 1.3 (mean porositas 10 % dan permeabilitas 4 mD).

ABSTRACT

ROCK TYPING TUBAN CARBONATE RESEVOIR, ALFATH FIELD, NORTH EAST JAVA BASIN

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ALFATH field located in NorthEast Java Basin, has been provento produce hydrocarbon, especially oil from Tuban Formation. By doing detailed analysis of facies characteritiation reservoir property, diagenetic process, and rock typing, this analysis is expected to provide better result of carbonate reservoir characterization and potential so the development in ALFATH field could be more efficient.

Tuban Formation in ALFATH Field consist of eight lithofacies (based on core) and seven lithofacies (based on image log) which is deposited on shallow platform interior, reef margin, upper slope, lower slope to deep basin as a buildup reef.

Exponent cementation (m) value calculation at ALFATH Field, using the Formation Factor Transform (core) and m equation based on pore type from image log analysis (no core). ALFATH Field reservoir has $m < 2$ for connected vuggy and fracture pore type, $m > 2$ for reservoir with isolated vuggy, stylolite and closed fracture pore type system.

Based on core data (ALFATH-2 and ALFATHE-15 well) and Modified Kazeny-Carmen method, that mean the same gradient value of Flow Zone Indicator reflected the same Rock Type or Flow Unit Cluster, has 5 (five) rock type or flow unit. FU1 is the best flow unit with value of FZI > 4 (average porosity 16 % and permeability 550 mD), FU 2; FZI value range of 3.2 – 4 (average porosity 21 % and permeability 295 mD), FU 3; FZI value range of 2 – 3.2 (average porosity 17 % and permeability 100 mD), FU 4; FZI value range of 1.3 – 2 (average porosity 11 % and permeability 16 mD), and FU 5 is the worst with value of FZI < 1.3 (average porosity 10 % dan permeability 4 mD).