ABSTRAK

ANALISIS FASIES DAN *ROCK TYPING* BERDASARKAN DATA BAWAH PERMUKAAN PADA LAPANGAN "MZ", FORMASI BATURAJA, CEKUNGAN JAWA BARAT UTARA

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Cekungan Jawa Barat Utara merupakan salah satu cekungan produktif di Indonesia kini menghadapi tantangan penurunan laju produksi setelah puluhan tahun dieksploitasi. Daerah penelitian berada di Lapangan "MZ" Formasi Baturaja, sebuah reservoar karbonat, yang memiliki karakterisasi yang berbeda dibandingkan reservoar klastika yang dominan di cekungan ini. Proses diagenesis pada batuan karbonat menghasilkan sistem porositas sekunder dan menyebabkan heterogenitas reservoar. Fenomena ini meghasilkan hubungan yang tidak linier antara porositas (ϕ) dan permeabilitas (k), di mana metode evaluasi petrofisika konvensional seringkali gagal memberikan interpretasi yang akurat.

Metode dilakukan dengan pendekatan kualitatif dan kuantitatif pada enam sumur dengan menggunakan data berupa *well data*, *rock data*, dan *test data*. Analisis heterogenitas dilakukan dengan mengklasifikasikan properti batuan melalui identifikasi *rocktype* yang diintegrasikan dengan analisis fasies pengendapan untuk mengklasifikasikan berdasarkan aspek petrofisika dan geologi. Penelitian ini meliputi analisis lithofasies, asosiasi fasies pengendapan, pengelompokan *rocktype*, dan analisis hubungan antara *rocktype,* dengan fasies pada Lapangan "MZ" Formasi Baturaja.

Hasil analisis kualitatif mengklasifikasikan menjadi lima lithofasies (*grainstone, packstone, wackestone, dolostone*, dan *crystalline limestone*).yang berasosiasi dengan *open marine – restricted platform interior* yang terbagi tiga zona. Berdasarkan properti petrofisikanya, dilakukan dengan metode deterministik dan *rocktype*. Berdasarkan hasil analisis hubungan *rocktype* dengan litofasies dan tipe porositas, maka dikelompokkan menjadi tujuh *rock type* yang berbeda dari RT-1 hingga RT-7 yang dipengaruhi oleh perbedaan litologi dan jenis porositasnya terhadap kualitasnya.

Kata kunci: Formasi Baturaja, Karbonat, Lithofasies, *Rocktype*.

ABSTRACT

FACIES ANALYSIS AND ROCK TYPING BASED ON SUBSURFACE DATA IN BATURAJA FORMATION, "MZ" FIELD, NORTH WEST JAVA BASIN

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The North West Java Basin is one of Indonesia's productive basins, but it is now facing the challenge of declining production rates after decades of exploitation. The study area is located in the "MZ" Field of the Baturaja Formation, a carbonate reservoir, which has different characteristics compared to the dominant clastic reservoirs in this basin. Diagenetic processes in carbonate rocks produce a secondary porosity system and cause reservoir heterogeneity. This phenomenon results in a non-linear relationship between porosity (ϕ) and permeability (k), where conventional petrophysical evaluation methods often fail to provide accurate interpretations.

The method was carried out using qualitative and quantitative approaches on six wells using data in the form of well data, rock data, and test data. Heterogeneity analysis was performed by classifying rock properties through rock type identification integrated with sedimentary facies analysis to classify based on petrophysical and geological aspects. This study includes lithofacies analysis, sedimentary facies association, rock type grouping, and analysis of the relationship between rock types and facies in the "MZ" Field of the Baturaja Formation.

Qualitative analysis classified the lithofacies into five types (grainstone, packstone, wackestone, dolostone, and crystalline limestone) associated with open marine – restricted interior platforms divided into three zones. Based on their petrophysical properties, the analysis was conducted using deterministic and rock-type methods. Based on the results of the analysis of the relationship between rock type and lithofacies and porosity type, they were grouped into seven different rock types, from RT-1 to RT-7, influenced by differences in lithology and porosity type affecting their quality.

***Keywords**: Baturaja Formation, Carbonate, Lithofacies, Rocktype.*