

**ANALISIS GEOKIMIA HIDROKARBON UNTUK MENENTUKAN  
KORELASI BATUAN INDUK DAN MINYAK BUMI  
SUMUR NA-1, CEKUNGAN JAWA TIMUR UTARA**

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**SARI**

Daerah penelitian terletak di sumur NA-1, Cekungan Jawa Timur Utara. Penelitian ini dilakukan dengan tujuan mendapatkan karakteristik batuan induk dan minyak bumi dari aspek geokimia organik setelah itu akan diketahui korelasi minyak – batuan induk itu sendiri. Analisis dilakukan terhadap 23 conto serbuk bor sumur NA-1 pada kedalaman 1511 m hingga 2062 m yang tersusun atas litologi batulanau, batulempung, dan batugamping berumur Pliosen Awal hingga Awal? Miosen – Oligosen Tengah. Metode yang dilakukan adalah analisis laboratorium, yang meliputi analisis *Total Organic Carbon* (TOC), pirolisis *Rock-Eval* (REP), Liquid Kromatografi (LC), Gas Kromatografi (GC), dan Gas Kromatografi-Spektrometri Massa (GC-MS). Data biomarker yang digunakan dalam penelitian dibatasi hanya pada ion massa yang umum digunakan yaitu triterpana ( $m/z$  191) dan sterana ( $m/z$  217). Berdasarkan data-data tersebut maka selanjutnya dilakukan analisis penentuan material asal dan lingkungan pengendapan. Evaluasi. Hasil analisis dari 23 percontoh sumur NA-1 menunjukkan nilai TOC 0,19 – 1,11 Wt% yang berpotensi rendah hingga baik untuk membentuk hidrokarbon. Hasil analisis pirolisis *Rock-Eval* memperlihatkan  $T_{maks}$  sebesar  $421^{\circ}$  -  $430^{\circ}$ C termasuk kategori belum matang. Sampel batuan berumur Pliosen Awal berpotensi sebagai batuan induk namun belum matang dengan kandungan kerogen Tipe II/III (*oil* dan gas), dan sampel batuan berumur Miosen Akhir, Miosen Tengah, dan Awal? Miosen – Oligosen Tengah berpotensi sebagai batuan induk namun belum matang dengan kandungan kerogen Tipe III (gas). Hasil biomarker dari batuan sumur NA-1 menunjukkan korelasi negatif dengan minyak bumi di daerah penelitian.

**Kata kunci :** geokimia, batuan induk, hidrokarbon, biomarker, korelasi.

**GEOCHEMISTRY HIDROCARBON ANALYSIS TO DETERMINE  
SOURCE ROCK AND OIL CORRELATIONS  
IN WELL NA-1, NORTHEAST JAVA BASIN**

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**ABSTRACT**

*Research area is located in well NA-1, Northeast Java Basin. The research was conducted to obtaining characteristics of the source rock and petroleum by organic geochemistry aspect, the oil – source rock correlation is based on comparison of each characteristics. Analysis is done to 23 cutting samples from NA-1 well in 1511 m – 2062 m depth, with litologies such siltstones, claystones, and limestones that have Early Pliocene until Early? Miocene – Middle Oligocene. The method used is laboratory analysis, including Total Organic Carbon (TOC), Rock Eval Pyrolysis (REP), Liquid Chromatography (LC), Gas Chromatography (GC), and Gas Chromatography-Mass Spectrometry (GC-MS). The biomarker data that have been used in this research is limited only on common mass ion such as triterpanes (m/z 191) and steranes (m/z 217). Based on those data, the oil – source rock correlation is made to determine source rock that produced hydrocarbon. The results of 23 samples from NA-1 well show TOC value about 0,19 – 1,11 Wt%, which has a low potential to well from hydrocarbons. The Rock-Eval Pyrolysis shows that the Tmax value around 421° - 430°C, which indicates immature level in maturity. Based on HI value that is 92 – 299 mgHC/g TOC. Samples of Early Pliocene have potential as source rock but still immature with Type II/III kerogen (oil and gas), and samples of Late Miocene, Middle Miocene, Early? Miocene – Middle Oligocene have potential as source rock but still immature with Type III kerogen (gas). The results of biomarker of NA-1 well rock showed a negative correlation with petroleum in the research area.*

**Keywords :** *geochemistry, source rock, hydrocarbon, biomarker, correlation.*