Journal of Applied Geochemistry
Vol. 15, No.1 (2013). pp 1-18

ORIGIN AND MATURITY OF OILS FROM EOCENE RESERVOIRS FROM A PART OF UPPER ASSAM BASIN, INDIA

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Abstract

Oils from Lakadong (Lower Eocene) and Langpar (Upper Paleocene) reservoirs from a part of Upper Assam basin have been studied through biomarker analysis for their origin and maturity. The oils are waxy and not biodegraded. They have high pristane/phytane ratio (>3), high oleanane and low steranes content. The oils are, therefore, derived from terrestrial organic matter having significant land plant input and deposited under suboxic to oxic environment. Also, the source rocks for the oils are of Tertiary age. Maturity parameters based on C_{27}, C_{29}, C_{30} and C_{32} hopanes show that the oils have generated from early to mid-mature source rocks. However, sterane maturity parameters show that the few oils have low maturity, while some oils have extremely low maturity corresponding to immature source rocks. The apparent anomaly between the maturity as measured by steranes and other biomarkers is due to the process of migration-contamination where mature migrating oil has been contaminated by very low maturity oil (rich in steranes) leeched from immature source rocks in the migration pathway.

Since the source rocks have low to very low maturity in the study area, most of these oils have migrated long distance from deeper mature source rocks. Few oils having low maturity may have generated from local source rocks.

Keywords: Upper Assam basin, Eocene oils, Biomarker analysis, Origin, Maturity, Correlation, Migration-contamination

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