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N-ALKANES DISTRIBUTION AND GEOCHEMICAL PARAMETERS FOR THEASSESSMENT OF DEPOSITIONAL ENVIRONMENT, AND THERMAL MATURITY OF OILS FROM THE GIANT FIELDS OF THE AJDABIYA TROUGH, LIBYA

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Abstract

In this study four crude oil samples from the giant oil fields (Ajdabiya Trough, Libyan Basin) were investigated to define thermal maturity levels and depositional environment of the corresponding source rocks. These crude oil samples were separated by column chromatography. Saturated biomarkers (n-alkanes and isoprenoid alkanes) were determined using gas chromatography (GC). The crude oil samples were divided into two main families based on differences in thermal maturity by n-alkanes and isoprenoid alkanes parameters (Pr/n- C_{17} and Ph/n-C_{18}). First family (A2, E2 and E1 oil samples) are more thermally mature than the second family (A1 sample). Using source-specific biomarker parameters based on pristane/phytane(Pr/Ph) ratios, dibenzothiophene (DBT)/ phenanthrene(P), Pr/n-C_{17} and Ph/n- C_{18},these crude oil sampleswere ascribed a marine shale deposited under sub-oxic conditions.