

SOURCE ROCK EVALUATION OF THE MIDDLE-UPPER JURASSIC STRATA OF THE BLUE NILE BASIN, SE SUDAN: GEOCHEMICAL AND PALYNOFACIES IMPLICATIONS

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ABSTRACT

A total of 106 ditch-cutting samples collected from three wells in the Blue Nile Basin, southeastern Sudan were analyzed using Rock-Eval pyrolysis and transmitted-light microscope. Results obtained from Rock-Eval pyrolysis indicate that the average TOC values are 2.12, 2.38 and 3.84 in X-1, Y-1 and Z-1 wells respectively. Based on the interpretation of the Rock-Eval data, the Middle-Upper Jurassic source rocks of the Blue Nile are dominated by kerogen Type III in the Blue Nile Formation and subordinate Type II kerogen in the lower part of Dinder III Formation. Brown to black woods form the dominant phytoclasts (40-90%) besides, are cuticles and degraded organic matter. This association confirms that the source rock is terrestrial, mostly kerogen type III. The VRo, HI and Tmax values suggest that the studied source rock is mature. The average S2 values signify good to very good hydrocarbon generative potential. The average PI varies from 0.11-0.15, which propose mature source rock and that the hydrocarbons are indigenous.

Keywords: Blue Nile Basin, Sudan, Pyrolysis, Source rock evaluation, Palynofacies.