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THERMAL DIFFUSIVITY ESTIMATES IN THE CHAD BASIN, N.E. NIGERIA-IMPLICATIONS FOR PETROLEUM EXPLORATION

[1]S. ALI,K. [2]MUSTO-ONUAHA AND [3]D. M. ORAZULIKE

[1] Physics Programme, A.T.B. University, Bauchi, Nigeria.
E-mail: alisani2000@yahoo.co.uk
[2] Department of Geology, University of Nigeria, Nsukka, Nigeria
[3] Geology Programme, A.T.B. University, Bauchi, Nigeria.

ABSTRACT

Estimates thermal diffusivities, Kappa, K of horizons drilled for hydrocarbons in the Chad basin, NE Nigeria obtained using density log tended to agree with those obtained from temperature-time data, with scatter in the first estimates seen as random fluctuations, while underestimation by the second are attributed to lack of quality data. Trend of Kappa, K across the horizons is interpreted as suggesting common source for the intrusives. Pressure-induced Kappa, K variations are estimated to be negligible, while those induced by temperature are significant. Rapid cooling of intrusions is argued to impact hydrocarbons maturation in manners that may not preclude their discovery.

Keywords: Aquifers, Chad basin, intrusive horizons, reservoirs, thermal diffusivity.