

Thermal Regime, Hydrodynamics and Petroleum Occurrences in the Essaouira Basin

Y. Zarhloule¹, M. Boughriba¹, L. Boudchich¹, A. Rimi², M. Verdoya³, A. Correa⁴, and J. Corneoro⁴

¹ University of Mohamed I, Faculty of Sciences, Department of Geology, Laboratory of hydrogeology & Environment, BP 524, Oujda, Morocco

² Department de Physique du Globe, Institut Scientifique, Rabat, Maroc

³ Laboratory of Geophysics & Radiometry, Department of Geology ? University of Gene, Italy

⁴ Geophysical Centre of Evora, University of Evora, Rua Romao Ramalho 59, 7000-671 EVORA, Portugal

Subsurface geothermal gradients play a significant role in oil exploration. Based on a synthesis of the shallow temperature measurements in hydrogeological wells and the deep ones recorded in electric logs from exploratory and development oil well in Morocco especially in the Essaouira basin. A study of heat flows and geothermal gradients was undertaken to more understanding the relation involving water, temperature and oil movement within a given sedimentary basin.

The possibility that positive geothermal anomalies and hydrocarbon occurrences in deep sedimentary basins are genetically related to formation water flow has been suggested by various authors. These suggestions have been corroborated by this study, particularly in the Essaouira basin Petroleum accumulations are located within a region of a relatively high geothermal gradient reaching more than 35°C/km and is located in areas of formation- water convergence.

Key word: Geothermal gradient, petroleum accumulations, aquifer, hydrodynamism, oil well, reservoir, heat flow.