

Integrated Geophysical and Geological Data Study on Patterns of Petroleum Basin Occurrence in the Kufra Basin – South-East Libya

Hussin B. Ghanush

Petroleum Research Centre (PRC), Tripoli, Libya

Abstract:

The Kufra basin is located in the south eastern part of Libya. It's organized as an intra-Cambrian pull apart basin, which broadened in the early Cambrian in relation to ongoing extension and rifting. During the Hercynian Orogeny, the entire region of the basin with the basin margins together were uplifted, resulting in the isolation from the Murzuq Basin in the west and the Cyrenaica Platform to the north.

The aims and objectives of the study is to implement gravity data in conjunction with other geophysical and geological data in order to provide detailed interpretation of depth to basement, basement structural grain, trap fairways, source kitchens and the distribution of Paleozoic and Mesozoic facies and thickness within the Kufra Basin. The analysis show that, there usually a strong relationship between regional basement structures and fracture patterns in overlying sediments. A detailed analysis of basement structural domains and their relationship to fracture patterns mapped on gravity and 2D seismic data would permit development of a template for predicting potential reservoir fracture patterns at various scales. Additional geochemical data could be used to develop a spatial and temporal understanding of the distribution of hydrocarbon families in the basin.