

## **Source Rock Studies of the Pedirka Basin, Australia**

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The Pedirka Basin is an under-explored Permian-aged basin, located in central Australia. After deposition of the Permian succession, the basin was covered by a thickness of between one to two kilometers of Mesozoic sediments of the Eromanga Basin. During its burial history, the basin has undergone several periods of relatively intense tectonic deformation along specific structural trends. Petroleum is known to occur in the basin from shows, and subsequent analyses, in many of the 14 exploration wells drilled in the basin from 1965 to 1990. The source-rock analysis of 24 samples obtained from exploration wells are consistent with a previous source-rock maceral study, and support the strong possibility of a good liquid hydrocarbon generative potential. This study shows the HI-OI and S1+S2 plots of the data are supportive of a higher than normal (for central Australia) type I kerogen content in the basin's Permian and Triassic source rocks.

Vitrinite reflectance data for the basin indicates that the deepest drilled sediments to date have a maturity in the middle of the Oil Window (0.85-0.90% maximum vitrinite reflectance). Burial history modeling of potential new well locations support maturity levels in this order. Calculations of possible volumes of hydrocarbons that could be generated indicate that volumes of the order of 108 m<sup>3</sup> (c. 600 MMbbls) of oil equivalent could potentially be generated in the deepest trough of the basin, which is the Madigan Trough. It is concluded that a good petroleum discovery potential remains within the deeper parts of the basin.