

Geological Similarities of Volcanic Oil and Gas Reservoirs in Eastern China



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Abstract: In Eastern China, Songliao Basin, Bohai Bay Basin, Hailar Basin and Erlian Basin represent back-arc basins formed during the subduction of the Pacific plate beneath the Eurasian Plate in Early Cretaceous and Palaeogene. The rifting was accompanied by massive volcanic eruptions, and followed by thermal sag phase. A total of 38 volcanic rock oil and gas fields have been discovered with proven reserves of 2.5×10^8 t. In this study, we reviewed the core, section data from wells in the four basins, together with tectonic evolution information, and previous research results from other publications, identified the horizontal and vertical distances between the source rocks and reservoirs, and made a comparison between the hydrocarbon charging periods and the active periods of main faults. Meanwhile, the main lithologies, facies and pore types of volcanic rocks were determined herein. The reservoirs have many common characteristics including the nearness of the source rocks (S), the fault as the main migration pathway (F),

and the lithology and facies (LF). S-F-LF pattern shows the similarities of volcanic rock oil and gas reservoirs providing a good guide and a help for future oil and gas exploration in Eastern China.

Key words: volcanic rock reservoir, geological similarities, source rock, migration pathway, lithology, facies, Songliao Basin, Bohai Bay Basin, Erlian Basin, Hailar Basin, Eastern China

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