

## Preliminary Analysis for Oil and Gas Geological Characteristics and Exploration Prospects of Doseo Basin in Central Africa

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**Abstract :** The Doseo basin in Chad, Central Africa is one of the most important oil and gas blocks in the world. However, the low degree of oil and gas exploration and the lack of relevant geological data restrict the understanding and resource evaluation of the basin. To further develop the Doseo basin efficiently, it is urgent to deeply analyze the source rock characteristics and hydrocarbon generation potential of the Doseo basin. Based on seismic and drilling data in recent years, this paper systematically evaluates the geochemical characteristics of source rocks and their generated oils in Doseo Basin, explores the development, distribution, and evolution characteristics of source rocks, and evaluates the exploration potential of Doseo Basin according to the hydrocarbon enrichment law. The results show that the Lower Cretaceous Baliemian and Apudian source rocks in Doseo Basin are well developed, with high organic matter abundance (average TOC $\geq$ 3%) and good organic matter types (type I~II), which are the main development layers of source rocks, but the organic matter maturity is generally low (Ro of the drilled source rocks is mainly between 0.4%~0.8%). The planar structure also shows that the main hydrocarbon accumulation mode in Doseo sag is the forward tectonic reservoirs such as near source anticlines and faulted noses. Finally, it is estimated that the accumulative resources of the main source rocks in the Doseo Basin are about  $4.33 \times 10^8$ T in Apudite and Balim terrace layers. The results of this study will help guide the next step of oil and gas exploration, which is expected to drive the next step of oil and gas development.

**Keywords :** Doseo basin, lower cretaceous, source rock characteristics, developmental characteristics, hydrocarbon generation potential

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