

Large-size erosional valley in Cambrian-Sinian in Sichuan basin and its sense for resource appraisal of large gas zone

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Oil and gas in carbonate rock took an important role in the global oil industry, but it was very complicated and difficult for exploration in China, because there were so many special features for marine carbonate, such as older strata and deeper buried depth. Recently large scale gas field was found in Cambrian-Sinian in central Sichuan basin, it was new breakthrough in carbonate in China.

According to traditional recognizing, source rock of Qiongzhusi group of lower Cambrian was main hydrocarbon source, with depth of 100-240m and widespread. But paleo-uplift in central Sichuan basin was formed early and long-term inheritedly developed. Source rock in flank firstly matured and oil and gas gathered by the way of lateral migration for a long time. Because top of paleo-uplift was far away from source rock, it was not favorable accumulation area.

In the research, large-size erosional valley which crossed the entire basin from east to west was found, with the narrowest width of 50Km and the widest with of 200Km. Thicken source rock of Qiongzhusi formation was filled in valley, with the width of 300-400m and Toc of 1.1-4.8%. It was high quality sapropel-type source rock and traditional recognizing for distribution of source rock was changed.

Furthermore, because valley was deep and source rock matured in early stage, hydrocarbon near source was favorable condition for large-size gas field in central Sichuan basin.

Key words: Sichuan basin; Cambrian-Sinian; erosional valley; source rock of Qiongzhusi formation