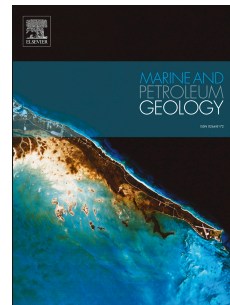


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## Quantitative impact of diagenesis on reservoir quality of the Triassic Chang 6 tight oil sandstones, Zhenjing area, Ordos Basin, China

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### Abstract

The Upper Triassic Chang 6 sandstone, an important exploration target in the Ordos Basin, is a typical tight oil reservoir. Reservoir quality is a critical factor for tight oil exploration. Based on thin sections, scanning electron microscopy (SEM), X-ray diffraction (XRD), stable isotopes, and fluid inclusions, the diagenetic processes and their impact on the reservoir quality of the Chang 6 sandstones in the Zhenjing area were quantitatively analysed. The initial porosity of the Chang 6 sandstones is 39.2%, as calculated from point counting and grain size analysis. Mechanical and chemical compaction are the dominant processes for the destruction of pore spaces, leading to a porosity reduction of 14.2% to 20.2% during progressive burial. The porosity continually decreased from 4.3% to 12.4% due to carbonate cementation, quartz overgrowth and clay mineral precipitation. Diagenetic processes were influenced by grain size, sorting and mineral compositions. Evaluation of petrographic observations indicates that different extents of compaction and calcite cementation are responsible for the formation of high-porosity and low-porosity reservoirs. Secondary porosity formed due to the burial dissolution of feldspar, rock fragments and

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