# 3D Geological Structure of the Lower-Mid-Jurassic and Lower Cretaceous Reservoir Rocks Stavropol Region, SW Russia: Case Study for Ozek-Suat Oil Field

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Interest to Lower-Middle Jurassic and Lower Cretaceous sediments of the Stavropol Region is rather high due to their significant hydrocarbon reserves. This study is devoted to detail geological subdivision, stratification and correlation of Lower-Middle Jurassic and Lower Cretaceous sedimentary formations, and structural-tectonic and lithological modeling as well.

Jurassic sediments are characterized by spotty distribution and variation of their thickness over the area. Upon analysis of structural forms of Jurassic sandstones it is revealed the following regularities: upward the section the depth of erosion is gradually increased from the south to north and area of sandstone beds occurrence is decreased.

Lower Cretaceous sediments occur on Jurassic rocks with stratigraphic and angular unconformity. This feature is caused by active influence of tectonic movements between Jurassic and early Cretaceous that stipulated stratigraphic and angular unconformities.

To study internal structure of these sediments it was conducted 3D geological modeling resulted in the set of improved structural-tectonic and lithological models for the Lower-Mid Jurassic and Lower Cretaceous sediments.

The detailed Lower-Mid-Jurassic and Lower Cretaceous sediments strata correlation of 150 well sections was executed. The concept of geological structures was revised. Structural surfaces were executed in accordance with new conceptual presentations.

The structural plan's positions were changed, that expanded deposit's areas, including on 10% of Jurassic sediments and on 30% of Cretaceous's. As a result of revision structural plans and interpretation of geophysical methods the original hydrocarbon's reserves were increased on 20% in Jurassic and on 60% in Cretaceous deposits. The residual hydrocarbon's reserves were calculated with using of detail geological model. The most prospective zones to increase production were fixed by geological models of the Jurassic and Lower Cretaceous sediments of Ozek-Suat oil field. The strategy for further development of the field was determined.