Structural Development of the Precaspian Basin

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The Precaspian basin is one of the deepest basins in the world with total thickness of sedimentary cover in excess of 20 km. The basin is situated on the southeastern edge of the East European platform. In the south and east it is flanked by buried fold belts. Review of geological composition and structure of the basin indicates that the basin passed through several episodes of deformation. Pre-upper Devonian history is poorly constrained. It is likely that the lower part of sedimentary fill includes thick Riphean and Vendian strata, deposited within the rifted margin of the East European platform in front of the Baikalian fold belt. In Ordovician, the basin experienced rifting resulting in the formation of the 300-km wide deepest axial trough in the northern part of the basin. The rifting was related either to the opening of the Urals or back-arc extension the Scythian orogen situated to the south. In the Late Frasnian, the basin was affected by episode of folding which is most likely related to initial phase of the Uralian collision. During Famennian-Sakmarian the Precaspian basin had been developed under combination of postrift and foreland deposition being repeatedly affected by compressional events generated by the Uralian-Scythian fold belt. The progressive orogeny led to isolation of the basin in Kungurian time. This together with arid climate resulted in deposition of thick salt layers. The Mesozoic-Cenozoic history of the basin started with collapse of the orogens in Early Triassic and was followed by several pulses of compressional and transpresional events governed mainly by the development of the Alpine-Hymalaya fold system. Two major episodes of salt diapirism took place in the Late Triassic and Late Cenozoic. Due to accommodation space restrictions the salt diapers formed predominantly vertical columns and walls.

Key words: Precaspian basin, salt diapirism, Uralian orogeny.