

Paper Number: 1380

Drilling of a 15 km super-deep well – a new stage in search for large and unique hydrocarbon accumulations in the Precaspian basin

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First fields in the Precaspian basin were discovered exactly a century ago (Dossor, Makat, 1915). Well flow rates from post-salt Mesozoic deposits exceeded several thousand tons per day.

The Precaspian basin has complex geology. Thickness of sedimentary cover is over 23 km. Giant oil and gas condensate fields were discovered in recent 30-40 years in the pre-salt deposits at the depths of 4.0-6.0 km (Russia: Orenburgskoye, Astrakhanskoye), (Kazakhstan: Kashagan, Tengiz, Karachaganak). In 2001 a gusher of light sweet oil was recorded from the Devonian deposits at the depth of about 7.0 km in the Astrakhan carbonate massif. Today the world is realizing that the epoch of “easy oil” has gone and according to experts, main oil and gas resources of the Earth are at the depths of 7-15 km.

For many decades Russian and Kazakh research and production associations have conducted collaborative studies of geological structure of sedimentary cover in the Precaspian basin at the deep depths. The result of this research is geological, geophysical, geochemical and thermodynamic substantiation of good outlooks for presence of oil and gas in pre-salt deposits in the Precaspian basin at the depths exceeding 8-10-12 km.

In October 2013 the project of drilling of a super-deep well in the central part of the Precaspian basin backed up by the leadership of Kazakhstan was presented at the Energy Forum in Astana. The project provides for large-scale regional geological and geophysical studies of the Precaspian basin including subsurface sounding to the depths of 25-30 km and drilling of a well to the depth of 14-15 km. The proposed super-deep well drilling project was supported by the international geological community and the top leadership of Kazakhstan and Russia after its announcement. Nobody in the world has ever set such a challenging task calling for innovative technologies, super-modern equipment and non-standard scientific-technical and engineering solutions. Successful implementation of the project as well as recent

discoveries of major deep fields Tupi in Brazil and Tyber in the Gulf of Mexico will undoubtedly give an impulse to extensive development of oil and gas resources in different sedimentary basins of the Earth.

As it was agreed, leading international oil and gas companies will participate in the implementation of the project. Considerable resource potential of the Caspian region makes it possible to forecast discovery of super-giant oil and gas fields at deep depths in the Precaspian basin. This assumption is based on the results of integrated research of the whole sedimentary cover of the Precaspian basin and its hydrocarbon potential

