

## **The Polar Urals Fold Belt: Tectonic Framework, Hydrocarbon Plays, and New Exploration Opportunities**

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### **ABSTRACT**

The Polar Urals fold belt covers much of the north-eastern part of the Timan Pechora basin. Sedimentary section of the area consists mainly of up to 12 km-thick Paleozoic carbonate-dominated deposits. It includes world-class source rocks such as the Domanik shale. Structure of the area is controlled by multi-level detachment faulting and disharmonious folding. The principal detachment is provided by the Upper Ordovician evaporates. Inhomogeneous grain of the basement and variations in mechanical stratigraphy of sedimentary section accounts for significant lateral structural segmentation of the fold belt. The structuring is related to a series of compressional and transpressional events occurred mainly from the Late Permian through the Late Triassic. It was followed by episodes of uplift in the Late Cretaceous and Late Tertiary. Recent exploration efforts in the Polar Urals fold belt and adjacent areas delivered the largest new oil discoveries in Russia. Significant part of these deposits is hosted in traps drilled and bypassed in course of the previous exploration campaign in 1980-ies. The new discoveries resulted from the integrated revision of geological setting of the area and implementation of new 3D seismic data, using modern depth imaging and drilling technologies, including sonic scanners and FMI. These allowed much better definition of traps and dramatically improved drilling success rate. The integrated interpretation of G&G data shows the presence of a large remaining exploration potential. The majority of traps are associated with thrust related folds and salt-cored 4-dip closures. Most important reservoirs include reefs, associated drape zones and probably talus aprons. High-resolution 3D seismic allows more accurate identification of karst zones and fracturing, which may improve reservoir properties. Of prime interest are traps developed prior to the main phase of the hydrocarbon migration in the Late Permian.