

THE URAL SUPERDEEP WELL: DRILLING RESULTS AND URAL 3-D MODEL

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The Ural Superdeep Well: drilling results and Ural 3-D model SEGALOVICH, V.I. Scientific-Industrial Center for Superdeep Drilling and Comprehensive Studies of the Earth's Interior Nedra, Yaroslavl, Russia. Problems of a deep structure, geodynamics and mineral resources of the Urals are solved on a basis of the Ural Superdeep Well and 3-D modelling of the Earth's crust by using seismic, gravimetric and magnetic data. We managed to bring the task to repeated (selection of the form of structures) solution of large ($E+5$ - $E+6$) systems of linear algebraic equations (calculation of density and magnetization by fields ΔG and ΔT). A sequence of volcanic-sedimentary formations O3-D1 penetrated by the Ural Well is understood as typical for the Ural internides. By geophysical data alongside 2.5 thou. km we distinguished structural units which correspond to the Paleozoic island arcs, ophiolite, microcontinents, granite intrusions and other complexes characteristic to internides. From the other hand we distinguished structures of external uralides including the ancient continental crust, sedimentary basins (R, V, PZ2-3-MZ), the Riphean and Paleozoic intraplate volcanic sequences. To develop a model of the Earth's crust of the Urals to a depth of 50-55 km (Moho) we used more than 100 arbitrary polyhedrons with variable density and magnetization. The model is proved by highly accurate approximation of geophysical fields, coincidence of physical parameters with logging data and others, coincidence with visible contours of structures with geological boundaries and deep boundaries - with the main seismic reflectors. We showed a tectonic matching of uneven-aged ore-bearing complexes formed under different geodynamic conditions. Control over oil- and gas-bearing capacity is supposed by zones of deep burial of ancient sediments with high thickness (10-12 km).