

СПИЧАК, ГОЙДИНА, ЗАХАРОВА

**QUASI-3D GEOELECTRICAL MODEL OF THE HENGILL
VOLCANOC COMPLEX (ICELAND)**

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Application of the neuronet based technology of the joint inversion of the MT/TDEM data allowed building the deep quasi-3D resistivity model of the Hengill volcanic complex. This model allows suggesting that the heat sources in the upper crust of the region are formed by upwelling of hot partly melt materials from the mantle, their accumulation in the shallow reservoirs and further leakage of the melt magma in the reologically weak layer at depths 5-15 km.

Comparative analysis of the deep sub-meridional resistivity cross-sections of the volume model confirms the hypothesis on migration of active volcanism from the Grendalur geothermal zone to Hengill Volcano along the secondary Olkelduhals tectonic structure.

Penetration of magma in the permeable layers of the upper crust results in formation at small depths of well conducting dikes and intrusions, the temperature of which could reach 1100° C. Cooling of high temperature magma can lead to the tensions in the surrounding rocks, which, in turn, result in fracturing and seismicity. Comparison between resistivity cross-sections and location of the earthquake hypocenters makes it possible to conclude that this is the most probable mechanism of seismicity.

Keywords: resistivity model, volcano, geothermal zone, electromagnetic sounding.