

PROPERTIES OF ROCKS IN THE SECTION OF THE KOLA SUPER DEEP BOREHOLE (KSDB-3) AND GEOPHYSICAL-STRUCTURAL MODEL OF THE UPPER AND MIDDLE CRUST

1GORBATSEVICH, F.F. and 2SMIRNOV, Yu.P. 1Geological Institute Kola Science Centre Russian Academy of Sciences, Apatity, RUSSIA; 2Scientific-Industrial Centre Kola Superdeep, Zapolyarny, RUSSIA

According to the geophysical investigation results (DSS, VSP et al.) the surroundings of the KSDB-3 - the Pechenga Block of the Baltic Shield - are characterized by a four-layered crust, the actual total thickness of which is about 40 km. The main borehole (and several complementary ones) intersected the entire sedimentary-volcanic sequence of the Lower Proterozoic Pechenga Formation (0-6,842 m) and a considerable part (6,842-12,261 m) of the Archean granitic-metamorphic complex of the basement. The study of elastic anisotropy of rocks along the KSDB-3 section by the acoustopolariscopy method has made it possible to subdivide the section into different stages on the basis of petrophysical properties: anisotropy index B and other data. A structural-anisotropic model of the upper and middle crust at the KSDB-3 site has been elaborated on the basis of boreholes I – IV trajectories, index B and angles of anisotropy planes incidence. The boundaries between the structural-anisotropic stages and the suite and stratum contacts within the Proterozoic and Archean complexes, as a rule, do not coincide. The current status of the theory and practice of geophysical observations, carried out on the earth's surface, does not yet allow one to specify a symmetry type and other data on unexposed rocks with certainty. Thus, scientific programs, using deep and super-deep wells, are needed to develop algorithms for processing geophysical work results (DSS, VSP et al.) in the regions of anisotropic rocks occurrence.