

UDC 550.83.04:550.812:553.078

STRESS-STRAIN STATE AND VARIATIONS IN THE ELASTIC PARAMETERS OF THE HOST GRANITOIDS AT DIFFERENT DEPTHS, THE MO-U ANTEI DEPOSIT, TRANSBAIKAL

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Abstract. The results of petrophysical studies of the host granitoids samples from deep levels of the molybdenum-uranium Antei deposit, the Streltsovskoe ore field (SE Transbaikal), are considered. With the increase in depth, the samples observed demonstrated the decrease in velocity of ultrasonic waves and the reduction of values of the Poisson's ratio and elastic moduli, that suggests a sharp decline in the ability of rocks to resist mechanical stress and increase in their fragility and fracture porosity. The degree of disturbance of the crystalline matrix also increases with the depth. The higher values of flow parameters imply conditions that are favorable to the circulation of ore-bearing solutions and ore localization. Accordingly, an increase in quantity and thickness of ore bodies with the depth can be expected. However, the real situation in the deposit is totally different. Both the quantity and the thickness of ore bodies decrease with the depth. Preliminary calculations of the modern normal stresses indicate the change in tectonic regime from tension to compression at deep (>750 m) horizons of the deposit. Thus the instrumental studies of the stress-strain state of the Antei deposit should be conducted and the project on the directional drilling for detection of hidden ore bodies should be developed.

Keywords: granitoids, main normal stresses, uranium deposit, petrophysical parameters, tectonic regime, ultrasound.

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