

Results of field work on magnetotelluric sounding using ADU-07e  
equipment on area Mutenbay in the Central Kyzylkum region of the  
Republic of Uzbekistan

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#### SUMMARY

One of the most informative geophysical methods for prospecting and exploration of geothermal objects is MT – magneto telluric sounding. The MT method is based on the study of the natural alternating electromagnetic field of the Earth - the magneto telluric field (MT-field). Due to the phenomenon of the skin effect, the high-frequency component of the MT field rapidly decays with depth and carries information only about the near-surface region of the Earth. For the field study, the electromagnetic measuring system ADU-07e of the Metronix company (made in Germany) was used. At low frequencies, the field penetration depth increases - it is possible to obtain information about the deep part of the geoelectric section. In comparison with other methods of induction sounding - frequency or field becoming sounding, MT uses the field of natural sources. Magneto Telluric field works were carried out on a 1: 50,000 scale, with a detail of 1: 25,000 in certain areas. Interpretation of the results includes the construction of geoelectric sections and the identification of zones, sections of electrically conductive formations on them and their linking with geological objects, which may correspond to MT anomalies (determination of the location of contacts of rocks with different values of conductivity, zones of tectonic disturbances. Based on the results obtained, a 3D model of the Mutenbay area with the geothermal station with a new settlement was built. This is practically very important, since the of the Muruntau quarry expansion is planned to the north-west and the old village needs to be removed. As a result of complex geophysical studies (gravity exploration, seismic exploration, magneto telluric exploration) the places of optimal laying of geothermal wells and, accordingly, the construction of a geothermal station to provide the new village with electricity were identified.

**Keywords:** Central Kyzylkym region, Uzbekistan, MT method, MT anomalies

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