

Geological Results from Electromagnetic Studies in Ukrainian Shield

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Results are based on more than 1000 MTS in the period range of 0.1 - 2000 s. Ukrainian shield subdivided into 4 geoblocks: Volin-Podolian, Kirovograd, Near-Dnieper and Near-Azov. The oldest one (2.6 Ga) is Near-Dnieper which defined by low crustal conductivity (less than 50 S). Arhean – early Proterozoic folding (2.6 - 2.1 Ga) is observed in Volin-Podolian block, here crustal conductivity varies in range 50 - 200 S excluding few local conductors.

Proterozoic folding with age of 2.1 - 1.75 Ga is inherent in Kirovograd block, here crustal conductivity varies from 500 to 10 000 S with scattered conductor's depth centered about 10 km. Well known Kirovograd conductivity anomaly manifested by the geomagnetic variations anomaly is characterized by conductivities 2000 - 5000 S. Most conductive is Rvasnopol structure (4000 - 10 000 S) which do not generate noticeable geomagnetic variations anomaly.

It can be interpreted as a lack of long distance electrical contact of separate conductors composing the Rvasnopol anomaly. More shallow conductors placed preferably to faults. According MTS data conductive faults form relatively regular systems with preferable azimuths (0, 17, 45, 90 and 110°) and spacing (33 km). Conclusion: In the Precambrian shield the higher total conductivity of the crust the younger folding of the block under consideration.

Supposing that crustal conductors are mainly graphite of organic origin we get independent estimation of the life intensity in Precambrian times.