

Viktor Pavlovski
V.V. Ishkov, research supervisor
L.O. Tokar, language adviser
SHEI «National Mining University»,
Dnipropetrovsk

Basic Results of Pilot Geolog Studies of the Dnieper Rapids Areas

Despite numerous historical and ethnographical data on the Dnieper rapids reliable information concerning geology of rapids areas is not still available. Therefore, the National Mining University on request of Dnepropetrovsk Community Foundation made geologic-geophysical complex of pilot studies. Analysis of the results obtained helps to conclude:

1. In spite of the fact that in the Dnieper valley, between cities of Dnepropetrovsk and Zaporozhye, basal complex of Ukrainian fundamental crystalline formation consists of five units. All rapids of the Dnieper consist of similar rocks - granitoids of Dnepropetrovsk complex (Ar_{1dn}) formed 3, 2 – 3, 4bln years ago. The rocks directly exposing earth surface are primordial both for Ukraine and for out planet. Their formation originated history of the Earth protocontinents.

2. Zones of tectonical faults determined on both geomorphological and geophysical features are contact lines of rapids (data of gravimetric prospecting and magnetic prospecting M 1:200 000 and M 1:50 000). Identified fault systems are grain boundaries, and form local block and mosaic crustal structure within the Dnieper rapids.

3. Analyses of material composition as well as textural and structural features of rocks confirm repeated processes of energizing crustal blocks movement along faults within rapids location. That very time analysis of indicators of tectonic movements in prominence within territory adjoining rapids shows that vertical and ascendant movement of local blocks of crust which upper part is rapids in the Dnieper valley still lasts.

4. Tectonic faults of crust located within the Dnieper rapids area are the most permeable zones, and hence mass-transfer and power-transfer “arteries” from bowels of the Earth up to its surface.

5. Repeated stages of energizing crustal blocks movement proved during the studies and followed by different types of deformations which vary stress pattern of rock mass are unusual “generators” of electromagnetic field modifications.