



Research of geological and tectonic structures of Mochovce Nuclear Power Plant area (Western Carpathians) using method of microseismic survey

A.V. Kalinina (1), S.M. Ammosov (1), V.A. Volkov (1), N.V. Volkov (1), J. Hók (2), M. Šujan (3), and L. Brimich (4)

(1) Institute of Physics of the Earth RAS, seismology, Moscow, Russian Federation (kalinina_av@mail.ru, +74992556040), (2) Department Geology and Palaeontology, Faculty of Natural Sciences, Comenius University Mlynská dolina, 842 15 Bratislava, Slovakia, (3) EQUIS Ltd., Račianska 57, 831 02 Bratislava, Slovakia, (4) Geophysical Institute Slovak Academy of Sciences, Dubravska cesta, 845 28, Bratislava

Investigated area belongs to the Komjatice Depression which is a north-eastern part of the Danube Basin. Miocene sediments of the Komjatice Depression overlay an erosive pre-Tertiary substratum drilled in several boreholes. The volcanic rocks form subaquaceous lava flows which belong to the distal parts of the Štiavnica stratovolcano rock complexes. The lava flows and two main fault systems were generally oriented in NE – SW direction in investigated area. The previous detail geological and tectonic studies which were realized in the vicinity of the Mochovce nuclear power plant (EMO) described conspicuous contact between the Miocene volcanics and sediments which was considered as a neotectonic fault with potential Quaternary activity from point of view of the conservative solution approach. The application of the microseismic survey method yielded a new data, which helped to specify of the geological and tectonic structures, as well as supposed fault-like contact in the EMO vicinity. The microseismic survey method is based on the analysis of the spatial distribution of microseismic field's amplitudes for all frequencies of the power spectra. The observations were performed in different points with a small spatial step at investigated area using movable stations. To eliminate global and local microseismic sources during the processing the field data were corrected using reference station data records. The maps of distribution of microseismic amplitude for different frequencies give the information about the relative velocities properties of the medium at different depths. The interpretations of the previous geological data and the microseismic survey method results allow recognize two floors in geological structure in the EMO vicinity: the pre-Tertiary rocks sequence and the formation of the Miocene volcano-sedimentary sequence. Results of the geophysical investigations confirmed transgressive contact of volcanic rocks and sediments on east foothill of the Dobrica elevation without tectonic disruption (fault) therefore present-day tectonic activity in this area is hardly expected.