

Definition of Delta Body in Northern Closure of the Vienna Basin (Sarmatian, Czech Republic)

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Structural reinterpretation of the earlier reflection seismic profiles and drill logs was performed during geological mapping 1:25,000 on the map sheet 34-223 Hodonín. This area is situated in northern part of the Vienna basin in the Moravian Central depression close to Slovak and Austrian borders. On the basis of seismic profiles, drill logs and lithological profiles of boreholes a large delta body was recognised in Sarmatian sediments. The delta body is characteristic of higher values of electrical resistance and spontaneous polarization in electrical well logging diagram and also by character of wave field of reflex seismic profile.

Sarmatian sediments belong to the Bílovice Formation (Čtyroký, 2000). The lowering of sea level in the Central Paratethys in Lower Sarmatian caused regression (Jiříček, 1990) and the Vienna Basin changed into a system of lakes and deltas in the Sarmatian. Later during Sarmatian a new transgression of brackish water flooded into the Uherské Hradiště trough. Jiříček (1990) also mentioned delta sediments near Hodonín.

We present the structural map of the basis of Neogene sediments with the boundary of delta body. It is situated near to Steinberg Fault system that represents the important extensive structure in the area and has a character of “flower structure”.

Using combined geological, logging and seismic data the an interpretative geological-geophysical cross-section was constructed. It runs from NW to SE and connects boreholes Mutěnice – 1, 2, 5, 6 and Kapřiska – 2. A complex of flysch sediments (Zlín Formation) and sediments of Middle and Upper Badenian (Hrušky Formation), Sarmatian (Bílovice Formation) and Pannonian (Bzenec, Dubňany and Gbely Formation) was distinguished in reflection seismic profile and also in geological profile. The profiles show complicated development of the northern part of the Vienna Basin (synsedimentary faults, “wrench faults”, “flower structures”, etc.).

References:

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Variscan High P-T Recrystallization of Ordovician Granitoids in the Veporic Unit (Nízke Tatry Mountains, Western Carpathians): New Petrological and Geochronological Data

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New petrological and geochronological data from metagranitoids and associated metapelites and metabasites (metagabbros) of the pre-Alpine, polymetamorphic basement in the northern part of the Veporic unit (Nízke Tatry Mountains, Western Carpathians) are presented.

Metagranitoids – a felsic, granitic gneiss (orthogneiss) have preserved their primary magmatic texture to varying extent. They consist dominantly of perthitic K-feldspar, plagioclase (oligoclase) and quartz. Due to deformation, the feldspars and quartz show dynamic recrystallization and grain-size reduction. Metamorphic garnet forms coronas around relict Ti-rich biotite and or along the boundaries between biotite and plagioclase. Small poikiloblastic garnets contain inclusions of kyanite, rutile and quartz. Larger polygonal garnets have developed by a coalescence and coarsening of numerous small grains. Primary plagioclase is replaced by fine intergrowths of kyanite, zoisite

(clinozoisite) and quartz. Phengitic white mica has developed between the grain boundaries of recrystallized feldspars or at rims of high-Ti biotite. Kyanite is partly transformed to sillimanite that is intergrown with low-Ti biotite and low-phengitic white mica. Calculated P-T conditions indicate peak metamorphic equilibration at 700–750 °C and 10–11 kbar followed by decompression to 650–700 °C and 6.5–7 kbar.

Associated paragneisses (metapelites) contain abundant garnet, kyanite, biotite, plagioclase, rutile and quartz with minor muscovite. Garnet forms porphyroblasts with inclusions of kyanite, Na-rich plagioclase, phengitic white mica, rutile, epidote and quartz. Calculated metamorphic peak P-T conditions are similar to those in metagranitoids, i.e. 700–750 °C and 10–11 kbar. Formation of retrograde chloritoid, chlorite and margarite due to partial breakdown of biotite and kyanite occurred in domains of probably Alpine deformation.