

## Alpine Deformations in the Area of the Čierna Hora Mts.

Roman FARKAŠOVSKÝ and Robert SCHMIDT

Katedra geológie a mineralógie Fakulty Baníctva, ekológie, riadenia a geotechnológií TU Košice, Park Komenského 15, 040 01 Košice, Slovak Republic

The Čierna hora Mts. is situated in the eastern margin of the Western Carpathian Internides.

The region is characterised by a heterogeneous structure, composed of basic units of the Western Carpathian Internides: the Veporicum unit, the Choč nappe of the Hronicum unit, the Late Palaeozoic of the Gemericum unit and the Meliaticum unit. Furthermore, the formations of Inner Carpathian Palaeogene and Neogene of the Košická kotlina depression take also their shares in its structure. The Veporicum unit consists of crystalline basement and Late Palaeozoic to Mesozoic cover formations. The crystalline basement is made of three lithotectonic complexes which are formed by the strongly diaphoritised gneisses and micaschists with the intrafolial amphibolite bodies, migmatites with the intrafolial aplitic granites, gneisses, migmatites, amphibolites and Variscan granitoids. The cover sequence of the unit starts with the Late Carboniferous and Permian clastic formations comprising rhyolitic volcanics within the latter. The Triassic to Late Jurassic part of the sequence is mainly composed of carbonates. The Gemericum unit involve mainly slightly metamorphosed Palaeozoic volcano-sedimentary sequences represented especially by polymict metaconglomerates, metasandstones, black shales and phyllites. The Tertiary sediments belonging predominantly to the Inner Carpathian Palaeogene progressively overlie the older formations. They are composed of flysch sediments, i. e., conglomerates and sandstones with intercalations of claystones and siltstones. The Neogene sediments, conglomerates and claystones in particular, cover some areas near the eastern and southern margin of the region.

Alpine deformations of the studied area have been developed in a polyphase process, influenced by either anisotropy of rocks or by a change of bulk strain regime during its evolution. Structural reworking of the units was accompanied by a low grade progressive metamorphism of the cover formations and by a retrogressive metamorphism in the basement complexes (Jacko et al. 1996). The dominant Alpine structures in the area are NW-SE trending and SW dipping zones of the deformation that segment Čierna hora Mts. into the main lithotectonic complexes. These shear zones were acting from the Lower Cretaceous and later have been reactivated during the further deformation stages (Polák et al. 1997). One of

these structures, which represents the boundary between the Gemericum and Veporicum units, belongs to important structures of the Alpine convergence within the Western Carpathian Internides with polyphase evolution, and is known as the Margecany - Lubeník line (Andrusov 1959). The rocks involved are foliated and usually lineated, thus indicating ductile deformation, and contain fabric elements with a monoclinic shape symmetry. Deformed metaconglomerates of the cover sequences of the Gemericum and Veporicum units show strong changes in the pebble shapes depending on their rheologic properties. Shear zones are accompanied by occurrence of the crystalline basement mylonites, especially mylonites of the granitoids and gneisses. The contact of the mylonite zone and unaffected wall rock tends to be a gradual fabric transition. These mylonite zones are interpreted as exhumed "fossil" ductile shear zones. Fabric elements within the mylonites represented by mantled porphyroclasts, mica fishes or C and C' type of shear bands with other foliations show predominantly a sinistral sense of the shear.

Development of younger neo-Alpine fault movements occurred in several stages but the sinistral NW-SE strike-slip faults were dominant. These ones have been arising in the palaeostress field of a transtensional regime with the E-W extension and the N-S compression. As a result the subsidence of the area took place. The blocks of pre-Tertiary rocks are plunged eastwards under sediments of the Eastern Slovakian Neogene basin. Single blocks were separated by the faults of the N-S and NE-SW strike.

### References

- ANDRUSOV D. 1959. *Geológia československých Karpát II*. SAV, 375 pp. Bratislava.
- JACKO S., SASVÁRI T., ZACHAROV M., SCHMIDT R. and VOZÁR J. 1996. Contrasting styles of Alpine deformations at the eastern part of the Veporicum and Gemericum units, Western Carpathians. *Slovak Geological Magazine*, 2, 151-164.
- POLÁK M. et al. 1997. *Vysvetlivky ku geologickej mape Braniska a Čiernej hory 1:50 000*. Geol. služba SR, Vydavateľstvo Dionýza Štúra, 201 pp. Bratislava.

## Vertical Ascent from the D-layer up to the Surface in the SW-Margin of the West-Sudetes Area in the Light of Xenoliths from Tertiary Basaltoids

Ferry FEDIUK

Geohelp Praha, Czech Republic

Situated at the triple-point junction Cretaceous - Permocarbo-

niferous - Železný Brod Crystalline Complex, the Miocene Kozákov volcano with its lava flows consisting of nepheline basanite is more than one hundred twenty years known as the

