W. and WEBER K. (ed.): *Pre-Permian Geology of Central and Eastern Europe*, 579-593, Berlin.
MATTE P. H., MALUSKI H., RAJLICH P. and FRANKE W. 1990. Terrane boundaries in the Bohemian Massif: results of large-scale Variscan shearing. *Tectonophysics*, 177, 151-70.
MAZUR S. and PUZIEWICZ J. 1995. Mylonity strefy Niemczy. *Annales Societatis Geologorum Poloniae*, 64, 23-52.
OLIVER G. J. H., CORFU F. and KROGH T. E. 1993. U-Pb ages from SW Poland: evidence for a Caledonian suture zone between Baltica and Gondwana. *Journal of the Geological Society, London*, 150, 355-369.

Comparative Sedimentology and Stratigraphy of Deep-Water Siliciclastics of the Mírov Culm and Part of the Zábřeh Crystalline Complex

Ondřej BÁBEK and Martin JANOŠKA

Department of Geology, Faculty of Science, Palacký University Olomouc, tř. Svobody 26, 771 46 Olomouc, Czech Republic

Sedimentologic and stratigraphic examination of selected localities in the Mírov Culm and a part of Zábřeh Crystalline Complex (Northern Moravia) indicates that both areas are composed of siliciclastic turbidites and related deep-water deposits showing a remarkable similarity in facies composition and meso- to microscale cyclic development. Four major facies were described and interpreted as hemipelagic muds, possible contourites, low density- and high density turbidity current deposits (Facies E2.2, E1.3, D2.3, C2.3, B1.1, A2.5 and A1.4 of Pickering et al. 1986). Facies composition and occurrence of distinct thinning- and fining-upward autocyclic units, interpreted as products of a channel migration, indicate deposition in a submarine middle fan environment, which is supported by trace fossil assemblages of *Nereites* ichnofacies. As suggested by previously published, sparse biostratigraphic data, both the Mírov Culm and the respective part of Zábřeh Crystalline Unit are possibly Devonian in age. The resemblance foreshadowed above may have ensued from a fact that both the units were deposited jointly in a single depositional setting. Examination of stratigraphic way-up indicators (normal grading, sole marks) revealed that some sections in both the units have been tectonically inverted, thus indicating a complicated tectonic fabric of the study area.

As we assume, though comprising two different geologic units the study area may represent a single, deep-marine turbidite depocentre which, providing that it is of Devonian age, is the most interior, topmost, and oldest tectonic unit of the Moravo-Silesian Culm.

Chloritoid-Biotite Assemblage as a Witness of Intermediate MP/LP-Metamorphism in the Královský Hvozd Unit, Moldanubicum, Bohemian Massif

Jiří BABŮREK

Czech Geological Survey, P.O. BOX 85, Klárov 3, 118 21 Praha 1, Czech Republic

The Královský Hvozd Unit (KHU) belongs to the least metamorphosed areas in the whole Moldanubicum. It comprises a region in the SW part of the Bohemian Massif, in the north separated from the Kdyně-Neukirchen basic Massif (already Bohemicum) by the Central Bohemian Fault (CBF).

In the northern margin of the Královský Hvozd Unit, bound by CBF, fine-grained garnet-chlorite-muscovite schists occur. Garnet grains are small in size (up to 1 mm) and show a strongly prograde metamorphic evolution. Spessartine component decreases from core to rim (55 mol% - 25 mol%) and almandine (35 mol% - 55 mol %) or pyrope (5 mol% - 12 mol%) components increase, as well as the content of grossular (8 mol% - 18 mol%). X^{Fe} ratio decreases from core to rim from 0.9 to 0.8. Plagioclase is pure albite (An_{02} - An_{03}) and muscovite conserves a higher phengitic substitution (3.38 $Si^{p.f.u.}$). Biotite is still unstable and thus Fe-Mg exchange between garnet and muscovite could be delimited. Garnet-muscovite thermometry yields temperature values of 425-450°C, and phengite barometry of associated metagranites gives pressure estimation of 8-10 kb. Therefore, the data presented testify to MP/LP Barrovian greenschist facies conditions of the metamorphism in the northern margin of KHU and SW margin of conventional Moldanubicum.

The structurally underlying rocks form mostly medium-grained mica schists. Their equilibrium assemblage changes from staurolite-biotite-garnet (the latter partly consumed) to andalusite-garnet-staurolite. The textural features indicate crossing the univariant reaction curve grt+chl+ms=

=st+bt+grt+H_2O. Garnet-biotite and garnet-staurolite thermometry locates the PT-position of this rock into the lower amphibolite facies and very low pressure range 500-525°C/2kb.

Between the two rock sequences described above, muscovite-biotite-chloritoid gneisses occur and contain plagioclases of two different basicities. Larger grains (up to 1 mm) are inversely zoned (An_{23} in core - An_{31} in rim). Smaller grains (0.X mm) are composedof pure albite (An_{01}). Accessory calcite in the intergranular space witnesses of Ca-saturation of this bulk rock chemistry. Therefore these gneisses could be regarded as a Moldanubian equivalent of the "Bündner Schiefer" originally described in the Alps where metamorphic zonal pattern on plagioclase basicity was provided. Such a basicity of up to An_{30} , was mapped in the Alps from the "Bündner Schiefer"-facies still below the staurolite isograde (i.e. below approximately 500°C). An upper pressure field of chloritoid-biotite assemblage is 4.2±1.9 kb. Similarly to the Stonehaven sequence (Scotland) such an assemblage requires very specific bulk rock chemistry Mg/Fe = 0.55, X^{Mn} = 0, and conserves intermediate MP/LP metamorphic conditions, as this rock does also in the temperature range. Hence the KHU recorded not only Barrovian and low-pressure metamorphic episodes, but also an intermediate stage.

Structural Investigation in the Root Zone of the Magura Nappe (the Middle Váh Valley NW Slovakia)

Lenka BAKOVÁ[1], František MARKO[2] and Martina BANSKÁ[1]

[1] *Geological Institute, Slovak Academy of Sciences, Severná 5, 974 01 Banská Bystrica, Slovak Republic*
[2] *Faculty of Natural Sciences, Comenius University, Department of Geology and Palaeontology, Mlynská dolina, 842 15 Bratislava, Slovak Republic*

The area studied consists of two lithotectonic units - the Rača Unit and the Bystrica Unit. These units reveal a thrust structure which was produced in a compressional regime. Both units are formed mainly by the so called Paserbiec sandstones which are characterised by bedding planes dipping steeply to the SSE. Hieroglyphs occurring on the upper side of bedding planes indicate that the Paserbiec sandstones are in an overturned position. Sandstones are consist of quartz and glauconite, less frequently contain also feldspar, calcite and mica.

At a macroscale, a conjugate set of faults penetrated the Paserbiec sandstones forming an asymmetrical system of slickensides dipping predominantly to the south. The slickensides are oriented in the same direction as the bedding planes, but they are not present throughout the studied area. The slickensides are covered with calcite fibres giving a good possibility to measure the sense of moving. Similarly, the sense of moving is well documented by drop-shaped clay grains. The slickensides as well as drop - shaped clay grains indicate a normal fault. The slickenside surfaces are intersected by micro/meso-shear zones, which penetrated surrounding rocks. Shear zones are composed of more fine-grained and lighter coloured material in comparison with surrounding sandstones. Using the cathodoluminescent method of petrographical analysis the shear zones contain 95% of quartz and 5% of feldspar grains. The presence of fractured quartz grains confirms the existence of normal fault structures which are also evidenced by delta-type rotated mica grains.

The studied area is dominated mostly by thrust faults. Therefore, there is possibility that the present normal faults in overturned Paserbiec sandstones developed from pre-existing thrust faults being lately reactivated and rotated. This is evident from palaeostrain diagrams: coefficient values of palaeostrain ellipsoid are close 0, which is typical of a compressional regime resulting in thrust fault structures. Steeply dipping beds of the Paserbiec sandstones represent the limbs of kink folds overlapping the ramps of horse duplexes. We suppose that at present the subhorizontal parts of ramps were eroded. It is also possible that the steep dip of these sandstones indicates the rooting of the nappe units in the Magura - Klippen belt junction area.

Amphibolites of the Polish Part of the Staré Město Zone

Wojciech BARTZ

Institute of Geological Sciences, University of Wroclaw, ul. Cybulskiego 30, 50-205 Wroclaw, Poland

The Staré Město Crystalline Unit is a narrow NE-SW trending belt separating the Lugicum and the Silesicum. The Staré Město Unit consists of several tectonically separated NE-SW trending structural belts. These are: partly molten leptino-amphibolite complex with spinel peridotites at the base; tonalite-granodiorite sills; mylonitic gabbros; retrograde schists and volcanite belt (Štipská et al. 1995).

A small part of the Staré Město Crystalline Unit is located within the area of Poland, in the vicinity of Bielice (Fig. 1). It consists mainly of banded amphibolites in the north and of amphibolitic schists in the south. Amphibolitic rocks contain numerous intercalations of gneisses and mica schists. Several concordant intrusions of syntectonic tonalites and granodiorites are present within the Polish part of the Staré Město Unit (Wierzchołowski 1966).

Banded amphibolites are medium- to coarse-grained and