ving a more organized character with well preserved Bouma's intervals, sole casts and positive grading. Fine-grained sandstones are often horizontally, ripple-cross or convolute laminated and alternate with grey mudstones. Lamination is usually emphasized by the plant and mica detritus. Well preserved flute and groove casts prove the flows directions prevailingly from W or NW to E or SE. The lithofacies of this horizon were deposited in the transitional zones between channels and overbanks or directly in overbanks.

The uppermost part of profile is represented by the Beloveža Formation built by very thin- to thin-bedded, fine-grained turbidites and hemipelagites. The beds of variegated (red brown, green grey) noncalcareous mudstones represent the condensed horizon. These mudstones contain agglutinated foraminifera fauna dominated by the tubular astrorhizids (*Nothia* sp., *"Rhizammina"* sp.) accompanied by abundant *Glomospira charoides*, *Hyperammina nuda* and *Ammodiscus planus*. No stratigraphically significant taxa were observed among agglutinated species. Single specimen of *Subbotina crociapertura* (?reworked) indicates the early Middle Eocene age. Paleoenvironment can be characterized as oligotrophic, well-oxygenated lower slope or basin plain below the CCD. Oligotrophic conditions are also proved by abundant findings of trace fossils (*Chondrites*, *Paleodictyon*, *Scolicia*, *Helminthopsis*) which is a widespread phenomenon related to global warming in the late Paleocene to middle Eocene (e.g. Uchman 2004)

In variegated shales from both Vyšný Komárnik and Dolhonec localities the solely agglutinated foraminifera fauna dominated by tubular astrorhizids (*Nothia* sp., *"Rhizammina"* sp.) was found. Rare *Saccaminoides carpathicus* evidences the Early Eocene age for both localities. Agglutinated foraminifer fauna indicates the lower slope depths below the CCD. Dominant *"Rhizammina"* sp. and abundant radiolarians from Vyšný Komárnik may indicate eutrophic conditions. Moreover, the finely pyritized radiolarians indicate oxygen-minimum zone in the water column according to the taphonomic interpretation of Bąk (2000). However, the deposition of variegated mudstones lasted until the Middle Eocene, as was recently proved from another localities near Vyšný Komárnik (Kender et al. 2005).

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Temporal Investigations and Retrograde Metamorphism of the North-Eastern Part of the Bohemian Massif

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Indentantion of a lithospheric Brunia continent with the Moldanubian orogenic root produced a crustal wedge, which shows following metamorphic zonality from the east to the west: chlorite-biotite, garnet, chloritoide, and staurolite in the easterly par--autochthon (the Desná dome), staurolite-sillimanite-andalusite in the deeper part and staurolite and garnet at the upper part of the westerly lower allochthon (the Keprník nappe) and kyanite zone in metapelites and eclogite boudins in the westernmost upper allochthon (the Velké Vrbno unit). The structural mapping distinguished fabrics related to burial, reworked by transpressional deformation and folding and finaly by heterogeneous extensional deformation associated with voluminous magmatism. Th-U-Pb dating on monazites provides information on the prograde and retorgrade parts of PT evolution while the closure of the K-Ar isotopic system in muscovite and biotite allows determining the time when the rock passes through the isotherms of about 360 and 320 °C, respectively. Four micaschist samples collected from chlorite-biotite zone (300–400 °C) at the eastern border of the Desná dome yield the K-Ar ages of muscovite that provides the age of metamorphic peak (from 320 ± 4.7 to 343

±5.1 Ma). Samples from the western part of the Desná dome (the staurolite zone), shows cooling ages on muscovites from 260 to 302 ± 4.4 Ma. In the Keprník nappe (staurolite-sillimanite zone) K-Ar method yields ages on muscovites from 285 to 300 ± 4.5 Ma while in the western part affected by syn-extensional magmatism the youngest age was depicted (300 ± 4.5 Ma, muscovite). Micaschists from the Velké Vrbno unit provide information about the earliest increments of synconvergent exhumation (331 ± 4.5 Ma, on biotite). Samples for monazite dating cover all units of wedge and inclusions of monazite in garnet and monazites in matrix were measured separately. In the Desná dome and in the Keprník nappe, both types of monazites yield similar ages ranging 250 Ma to 297 ± 30 Ma. However, the samples from the Velké Vrbno unit exhibit two generations of monazites: in the garnet porphyroblasts the average ages correspond to 340 ± 30 Ma, while in the matrix average age of 302 ± 30 Ma was depicted. In order to correlate the K-Ar ages with the exhumational P-T path, the conditions of trapping of fluid inclusions in quartz and quartz –andalusite bearing tensional gashes were studied. In andalusite are identified ambigeous primary inclusions, while in quartz are observed primary and secondary inclusions. Primary incluisons of quartz were trapped from a homogeneous fluid phase. Interval of trapping is 280 to 380 °C at 2–2.8 kbar and consequently the ages of exhumation 282–293 Ma determined from K-Ar dating on micas are related to this event. In conclusion, the burial of continental crust occurred around 340 Ma, followed by synconvergent exhumation at 330 Ma and the up-doming of the crustal wedge accompanied with intrusion of large scale granite and final extensional collapse at about 300 Ma.

Tectonic Position of the Latest Triassic–Jurassic Sequences of Rudabánya Hills, NE Hungary – The First Steps in a Puzzle

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The Jurassic rocks of the Rudabánya Hills have been studied since the middle of the 19th century. However, our knowledge on their tectonic position, the number of the tectonic units, the history of their deformation, their exact age, their Triassic basement, and anyway, the correct order of the formations are not satisfying, yet. On the other hand, the Jurassic age of these formations was generally accepted only about 15 years ago, based on the works of Grill, Kozur and Dosztály.

The previous researchers divided the Jurassic rocks into two sequences by right of lithological and paleontological data (Grill and Kozur 1986, Dosztály 1994). The Telekesvölgy Formation (TV Fm.) starts with red and green clay marl, containing limestone olistholites and redeposited beds . This sub-unit likely has latest Triassic age, according to the Conodont fauna of the olistholites and redeposited limestone beds. Although the contact or transition is not clearly outcropping, the green and red marl is followed by grey crinoideal limestone and marl with no exact age, and finally, by black shale, with Bajocian – Bathonian radiolarians (Grill 1988, Dosztály 1994).

The Telekesoldal Formation (TO Fm.) contains silicified slate and marl with subvolcanic rhyolite bodies, black shale with sandstone olistholites (reinterpreted here as sandstone turbiditic layers) and a sub-unit of olistostromes with varying clast composition (limestones, rhyolite). From the sedimentary rocks, the only age we have, is Bajocian by right of the radiolarian fauna of the lowermost slate–marl member (Grill and Kozur 1986, Dosztály 1994). Radiometric age of the rhyolite was estimated with Rb/Sr (158 ± 34 Ma) and K/Ar (120 ± 6 Ma) methods (Grill 1988). The first method gives a wide age interval for magma intrusion; the other one may reflect the Early Cretaceous metamorphic event thus the exact formation age of the rhyolite remains poorly constrained.

In our work we made field works and measurements, thin sections, illite Kübler index measurements and radiolarian investigations, and re-examined several borehole material. The rocks of TO Fm. have a bedding-parallel foliation (S_1); in the olisthostroms foliation is connected to strong layer-perpendicular shortening (flattening of clasts). Rarely the bedding and the foliation intersect each other at an oblique angle. In this case, the foliation is an axial plane cleavage (S_2), connected to closed folds. The bedding-parallel foliation was overprinted by a folding phase, resulting in small-scale kink folds (F_3), at the transition of brittle-ductile deformation field. The effects of such ductile phases cannot be determined neither on the members of the TV Fm., nor on the Triassic rocks of Bódva series (Middle Triassic platform carbonate, red, basin facies limestones and chert from Middle Anisian to Middle Norian).

According to the radiolarian investigations, and the illite Kübler index data, measured on the rocks of TV Formation correspond to the diagenetic zone (Árkai 1982, Árkai and Kovács 1986), and contains poor Middle - Jurassic (Bajocian – Upper Bathonian) radiolarian fauna with the dominance of Nassellarians (deeper water) (Do-