Reference
Burgess N.D., Richardson J.B. (1991): Silurian Cryptospores and Miospores from the type Wenlock Area, Shropshire, England, Paleontology, 34, 3, 601 – 628

EARLY PALEOZOIC EVOLUTION OF THE BARRANDIAN TERRANE BOHEMIAN MASSIF, CZECH REPUBLIC: PALEOTECTONIC IMPLICATIONS OF SEDIMENTARY, FOSSIL AND VOLCANIC RECORD

F. PATOČKA[1], A. GALLE[1], M. VAVRDOVÁ[1] & P. VLAŠÍMSKÝ[2]

[1] *Geological Institute, Czech Academy of Sciences, Rozvojová 135, 16500 Praha 6, Czech Republic*

[2] *Czech Geological Survey, Klárov 3, 11821 Praha 1, Czech Republic*

A tentative reconstruction of the Early Paleozoic development of the Barrandian is based upon its sedimentary and fossil record, the geochemistry of volcanic rocks, and a limited amount of reliable paleomagnetic data.

The Barrandian Early Paleozoic sequences form a part of the Barrandian Terrane, comprising the Upper Proterozoic and Lower Paleozoic of the entire Teplá–Barrandian–Železné hory Mts. region together with the substratum of the Bohemian Cretaceous Basin, and contact–metamorphosed relics ("Islet Zone") of the Central Bohemian Pluton mantle. The Barrandian Terrane is considered to be one of the numerous peri–Gondwanide terranes which were rifted off the northern margin of Gondwana during the Late Cambrian and Ordovician and translated from higher southern latitudes towards the Equator, and finally accreted stepwise to Baltica (Laurussia) during the Silurian, Devonian and Carboniferous.

The Early Cambrian Barrandian volcanics, displaying geochemical features of both active plate–margin and of within–plate igneous rocks from regions of attenuated continental lithosphere, were probably emplaced during the Cambrian collapse of the Cadomian orogene which introduced the Early Paleozoic large–scale break–up of the northern Gondwana margin. A close affinity of Barrandian to Gondwana during the Cambrian is indicated both by the Early Cambrian continental clastics, which were deposited under a semiarid to arid and possibly cold environment, by the Middle Cambrian marine clastics containing a Gondwana fauna and by the paleomagnetic data indicating a Mid–Cambrian paleolatitute of about 40° S.

Separation of the Barrandian Terrane from the Gondwana during the Late Cambrian was ushered in by numerous intrusions of diabases of transitional to alkaline MORB composition; these large swarms of diabase dykes – cross–cutting the Middle Cambrian – are truncated by the Cambrian/Ordovician disconformity. Counter–clockwise rotation by ca. 90° accompanied the northward translation of the Barrandian Terrane to paleolatitude af ca. 28°, that was achieved in Tremadoc. This motion of the Barrandian Terrane was accompanied by subduction of oceanic lithosphere beneath it, giving rise to a rather intensive subaerial, mostly intermediate to acídic calc–alkaline volcanism in the NW part of the Barrandian basin, that is dated at 501±5 Ma; contemporaneous deformations, causing the development of a disconformity between the Middle Cambrian and Ordovician strata, are equivalent to the Sardic Orogeny.

The Cambrian/Ordovician boundary is marked by an inversion of the Barrandian relief. The area of Cambrian sedimentary basin occupying the SE limb of the Barrandian was uplifted whereas the Prague Basin began to subside during the Early Ordovician along the axis of the Barrandian Terrane. Since Ordovician times the Barrandian volcanism is purely of a within–plate nature until its terminating during the Middle Devonian. As within–plate volcanism it generally accompanies crustal extension, tectonic setting of the Barrandian during this time span was probably similar to that of modern extensional basins. The magmatic evolutionary sequence, ranging from Ordovician exclusively alkaline volcanic activity to the Silurian alkaline, transitional and tholeiitic rock types, suggests that extension culminated in the Silurian, during which the Prague Basin reached a maximum width.

Widening of the Prague Basin, the axial parts of which are preserved in the Barrandian Synclinorium, was coupled with a decrease of clastic influx from the source regions, as evident by the open marine nature of Silurian and Early Devonian sediments.

The gradual disappearance of paleoclimatic differentiation and cosmopolitan nature shown by the Prague Basin fossil communities at the end of Ordovician can be ascribed to the drift of the peri–

Gondwanide terranes towards the Equator. The Prague Basin Silurian as well as Devonian fauna points to the Barrandian Terrane position within the peri–equatorial zone. The Middle Devonian paleolatitude is estimated to be less than 10° S. During the Mid–Devonian, the Prague Basin extension terminated; appearance of the flysch facies sediments derived from southern sources during the Givetian correlate with the onset of the Ligerian orogenic pulse of the Variscan orogenic cycle with which sedimentation ceased in the Barrandian Terrane.

The Lower Paleozoic Prague Basin and the other Early Paleozoic sequences of the Barrandian Terrane represent the remnants of an originally much larger basin which can be interpreted as a component of a back–arc basin of the Ligerian–Moldanubian Cordillera that is thought to correspond to a primeval tectonic element of the Variscan foldbelt.

THE STORY OF VARISCAN GRANITE MAGMATISM IN THE WESTERN CARPATHIANS (SLOVAKIA)

I. PETRÍK, I. BROSKA, P. UHER

Geological Institute of the Slovak Academy of Sciences, Dúbravská cesta 9, 842 26 Bratislava, Slovak Republic

The first granite–forming event, producing *S–type* magmas in the Western Carpathian segment of the Variscan orogen occurred probably during upper Devonian/lower Carboniferous times. It might have resulted both from the thermal re–equilibration and resulting metamorphism after crustal shortening, and from the heat input following a possible slab detachment. Later, at the end of Carboniferous a widespread thermal event, possibly intrusion in hot mantle magmas, might have caused melting of lower crustal lithologies to give *I–type* granitoid magmas bearing distinct features of magma mixing (enclaves). This event may record either a renewed subduction or lithospheric thinning following the previous delamination. The last (Permian) granite group, with the *A–type* tendency, may have formed during the post–orogenic stage in tensional régime along huge faults. In general, the development of granite magmatism in the Western Carpathians is analogical to that along the whole Variscan orogenic belt.

While the *S–type* granites record a formation from quartzo–feldspathic mica–bearing source rocks *via* muscovite ± biotite dehydration melting in reducing and relatively water–poor conditions, those of the *I–type* group indicate a deeper origin from intermediate biotite–bearing source lithologies due to biotite (hornblende?) dehydration reactions. Primary mineralogy confirms the formation in oxidizing and relatively water–rich conditions. These features evoke the basic magmas to be have been enriched in volatiles during an earlier subduction event. Mafic magmatic enclaves point to a deep heat source. Smallest by volume, the *A–type* granite group suggests an origin from a drier source rock (possibly having already experienced a melting event) in moderate oxidation conditions stressing a more significant role of other volatiles (e.g. F).

STRATIGRAPHY, SEDIMENTOLOGY AND SANDSTONE COMPOSITIONS OF LATE ORDOVICIAN CLASTIC SEQUENCES IN THE CARNIC ALPS

P. POSCHESCHNIK[1], F. NEUBAUER[2]

[1] *Dept. of Geology and Paleontology, University of Graz, Heinrichstr. 26, A–8010 Graz, Austria*

[2] *Dept. of Geology and Paleontology, University of Salzburg, Hellbrunner Str. 34, A–5020 Salzburg, Austria*

Sedimentological parameters of ca. 20 sections including Late Ordovician sequences distributed over the eastern and central Carnic Alps reflect several depositional cycles. In the Fleons Fm., the lowermost here studied formation, marine sedimentation was dominated by high sediment supply into a fan delta environment and by mafic, later acidic pyroclastic rocks. In the following Trieb Fm., high energetic near shore environments with coarse clastics and transitions into low energetic, deeper marine environments were observed. A sequence stratigraphic model was used for correlation of sections (Fig.1). Sections reflecting shallow marine environments are marked by low angle angular disconformities pointing to an erosional phase within the lower Trieb Formation. Above this disconformity, up to 80 m thick clastic sequences reflect sedimentation under transgressive conditions. This large, by a rising sea level dominated cycle is overprinted by smaller regressive and transgressive cycles. In the follow–