normal faults at the eastern edge of the Gerecse Mountain and partly renewed neoalpine faults, producing southwest-dipping half-graben structures in the Dorog-basin. It is supposed that old faults may have renewed during the Quaternary, enhancing the morphological imprints of older structures.

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The Anatomy of Strike-Slip Gas-Bearing Structure of Ryszkowa Wola (Carpathian Foreland Basin, SW Poland) as Revealed by 3D Seismics: a Product of Late Sarmatian-Pliocene(?) Episode of E–W Directed Tectonic Compression

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The Miocene Carpathian foreland basin in Poland (CFB) has developed in front of the Outer Carpathian fold-and-thrust belt, at the junction of the East European craton and the Palaeozoic platform. Numerous gas fields occur in the Miocene, Upper Badenian through Sarmatian, deposits of the sedimentary infill of the eastern part of the CFB. The gas-bearing Miocene succession is characterised by a shallowing-upward trend of sedimentation and consists of offshore hemipelagic, turbiditic and deltaic and nearshore-to-estuarine facies associations. The foredeep basin formation was largely controlled by the structure of its Neoproterozoic-Early Cambrian basement, especially by NW-SE trending faults inherited form Palaeozoic through Mesozoic tectonic history of SW Poland. Several NW-SE-elongated, narrow basement pop-up structures developed in the northeasternmost part of the CFB, one of them being the Ryszkowa Wola block. The uplift of the latter basement block involved Miocene reactivation of the older fault zones. The uplift of this pop-up structure in the basement brought about the formation of a narrow, NW-SE elongated Ryszkowa Wola horst (RWH) above it, in the Miocene strata. A complex system of right-stepping, en-echelon, mainly normal, faults of predominantly E-W trend, branching off from the NW-SE-striking boundary faults of the RWH, has developed around and above the horst, leading to compartmentalisation of the Miocene succession into numerous, mutually displaced and rotated fault blocks. The above interpretation of the deep-seated Ryszkowa Wola gas-bearing structure, based on 3D seismic data from the Sieniawa-Rudka area, was supported by field investigations in land surface outcrops in a clay pit at the village of Wylewa near Sieniawa, located directly above the RWH. In Late Miocene (Sarmatian to Pliocene?) times, the Sarmatian Krakowiec clay underwent intense tectonic deformation there, producing tight folds of NNW-SSE to N-S axes, strike-slip and dip-slip faults of various sizes, tectonic joint systema and a pencil cleavage localised in fold hinges and steep limbs. Such an association of deformation structures is easily interpretable in terms of a sinistral transpression conditions with the horizontal maximum compression axis directed ±E-W and a sinistral strike-slip displacement in the basement on NW-SE striking faults. The same sinistral kinematics can be inferred from the en-echelon fault arrays recognised around the RWH from the 3D seismics. An important implication of the structural features at Wylewa and Rudka seem to be an inference about a hitherto unknown epi-

sode of Late Neogene tectonic compression along ±E-W direction in the eastern part of the Carpathian foreland basin, possibly of regional extent. The structural interpretation of the Ryszkowa Wola structure proposed here is in line with published results of analogue modelling of fault patterns in sediments overlying active strike-slip displacements in a rigid basement. The basement-cover interaction within the Ryszkowa Wola high in the area of Sieniawa-Rudka was synsedimentary with respect to the Miocene deposition of the CFB infill. The uplift and horizontal displacements of the Ryszkowa Wola basement block modified the local subsidence pattern and the organisation of Miocene depositional systems. The syn-depositional strike-slip fault activity in the basement of the CFB resulted in differential movements and rotations of kinematically linked fault-blocks in the Miocene succession around and above the RWH, leading to the formation of numerous gas traps.

Thermal Overprint in Paleozoic Sediments of the Moravo-Silesian Zone, Bohemian Massif: a Record of Late Variscan Orogen-Parallel Extension

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Moravo-Silesian Zone (MSZ) constitutes the eastern periphery of the Variscan orogene in Europe. Devonian and Lower Carboniferous sedimentary and volcanic rocks of the MSZ (eastern part of the Czech Republic and the Cracow-Silesia region of southern Poland) show a general trend in increasing thermal maturity from the foreland located to the E to the Variscan orogene located to the W. In the eastern, Polish part of the MSZ thermal overprint is relatively low and related mainly to intrusions of small intrusive bodies. In the western, Moravian and Silesian part, however, the thermal maturity is much higher and it shows some peculiarities that, so far, have not been sufficiently explained.

Principal characteristics of the thermal maturity field in the western part of the MSZ as revealed from combined vitrinite reflectance (Rr), conodont colour alteration index (CAI) and illite crystallinity (IC) data-base are as follows:

(i) thermal maturity ranges from anchimetamorphic conditions (Rr = 3.5–5.5 %, CAI5, IC = 0.2–0.3 ° 2Θ) to late diagenetic conditions (Rr < 1.8 %, CAI 3.5, IC = 0.8–1.6 ° 2Θ);
(ii) in some locations (e.g. borehole Potštát-1) saw-tooth pattern in Rmin a Rmax values downhole indicates that Variscan thrust tectonics, which is nicely visible in seismic lines, did not affect the area before it attained its final thermal maturity;
(iii) general data distribution, however, indicates that especially in the western part isotherms intersect major Variscan tectonic structures;
(iv) heat flow during the maximum heating was much higher then the present-day values;
(v) Alpine tectonomagmatic cycle did not produce sufficient heat to overprint this principal pattern.

As the data show, the rocks in the Moravian part of the MSZ attained their maximum thermal maturation during the final stages of the Variscan deformation and just after it, within the Upper Carboniferous to Lower Permian period. This coincides well with the maturity field patterns in the Polish part of the MSZ (Belka 1993) as well as with the timing of some principal tectonomagmatic processes at the eastern margin of the Bohemian Massif. These include a major remagnetisation event occurring in the Moravian part of the MSZ, late Carboniferous ages of intrusion of the Žulová intrusive body in northern Moravia and 300–310 Ma cooling ages of white micas in the Keprník and Desná domes (Maluski et al. 1995). Stretching lineations in the mica-bearing blastomylonites of the Keprník and Desná dome as well as in the sediments of the MSZ document a Late Variscan orogen-parallel extension, which was associated with thermal overprint of the rocks in the MSZ.

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