



ON THE STRATIGRAPHY OF THE NEOGENE SEDIMENTS FROM BELIBREG BASIN, WEST SREDNA GORA ZONE (PRELIMINARY RESULTS)

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Belibreg basin is situated in the south-western part of the West Sredna Gora Zone and belongs to the West Sredna Gora tectonic unit (Dabovski et al., 2002). The basin is located within a graben structure with the same name, which is an elongated in NW-SE direction zone with maximum length of 9 km. and width of 2-5 km. The basin extension near the Gaber village is controlled by SW-NE faults. From previous investigations the basin is also known as Burrell basin (Konjarov, 1932), Gaber-Tsatsarovtsi basin (Kamenov, 1948 – unpublished data), whereas the graben structure was denoted as Gaber depression (Zagorchev et al., 1995).

The location of the Belibreg basin in close proximity to the Sofia basin, which was developed within the borders of the Sofia Neogene Graben and is the dominant sedimentary basin in the West Sredna Gora tectonic unit during the Neogene, have led to the raising of two different concepts about the development of the studied basin. The first one (Yovchev, 1960; Zagorchev et al., 1995; and others) is based on the fact that all Neogene sedimentary basins in the region belong to the West Sredna Gora tectonic unit and according to their geographic proximity, the identity of the lithologic properties, as well as the age of the rock sequences, the Belibreg basin and the other small basins in the region should be considered as parts of the great Sofia basin. In addition, the terminology accepted for the sediments within the Sofia basin (Kamenov, Kojumdzieva, 1983), was applied for the lithostratigraphic sequences in these basins (Zagorchev et al., 1995). The other concept (Konjaroff, 1932; Kamenov, 1948 – unpublished data), which is supported by the authors of the present study, considers the Belibreg Neogene graben-basin as a separate one. The investigations on the area development, tectonic adherence, as well as the complete study of the stratigraphic sequences, their composition, structure, genesis and age, allow us to consider the Belibreg basin as a separate sedimentary basin with specific lithostratigraphic units and geologic history.

The aim of this study is by using a complex of lithologic, genetic and stratigraphic analysis to provide data about the stratigraphy, compositional and structural properties of the Neogene rocks from the Belibreg basin, based on data from outcrops, mines and boreholes.

During the coal exploration within the Belibreg basin the sedimentary sequence was divided to five horizons (Yovchev, 1960; and others). In the present study we have split the sediments into three Formations, lying one over another and denoting different stages in the development of the sediment's deposition. These Formations represent a transgression-regression sedimentary cycle. The terrigenous rocks are characterized by an increase in the textural and mineralogical maturity.

Nedelishte clayey-conglomerate-sandstone Formation (new Formation)

The Formation is composed of conglomerates, sandstones and sandy clays, lying below the main Beli Breg coal bed. These sediments were deposited over folded Mesozoic basement rocks. This Formation corresponds to the I-st horizon (Yovchev, 1960; and others). Complete profile of these rocks can be established in the central part of the graben, whereas on the surface they are exposed only as small outcrops in the eastern part of the basin, near the village of Tsatsarovtsi, as well as in the western part of the basin to the south of Goliamia Nedelia peak. Both outcrops are now covered by present-day alluvial sediments and open-pit's technogenic materials. For that reason we are using the rocks from the central part of the basin, near the village of Tranertsii, as a type location, whereas for the holostratotype section a borehole log is used. The outcrop near the road to Tsatsarovtsi village (to the south of the abandoned bridge) can also be used as an additional locality. The Formation is represented by an alternation of conglomerates and sandstones in the lower part of the profile, covered by sandstones, coaly and sandy clays. The thickness of these rocks ranges between 40 and 60 m. Near the basin margins proluvial and colluvial breccias, containing fragments of middle Triassic, Late Jurassic and Late Cretaceous limestones, sandy limestones, sandstones and volcanic rocks, can also be seen. The age of the whole sedimentary sequence was determined with respect to its stratigraphic position as Late Miocene, Meotian to Meotian-Early Pontian age.

Kaisiinitza sandstone-claystone Formation (new Formation)

The type locality and the holostratotype section are situated in the "Nedelishte" open-pit mine, below the road to the Nedelia village in Kaisiinitza area, western part of the basin. The base of the Formation is represented by the Belibreg coal bed, which can also be used as a datum level. The coal is at lignite coalification stage and contains locally distributed lenses of sandy and limy clays and clayey sandstones with organic detritus. Belibreg coal bed is 5-10 to 20-30 m thick. Variable amount of limy and sandy clay layers, containing organic detritic particles are present in the middle and in the upper part of the seam, thus worsening its technological properties. Upwards, up to 30-40 m of sandy, silty and limy clays, which form the main body of this Formation, were deposited. These rocks, together with the coal bed correspond to II, III and IV-th horizons (Yovchev, 1960; and others). The claystone is composed mainly of illite and montmorillonite and at some places is rich in carbonates and contains lenticular layers rich in detritic fragments and shells of ostracodes, gastropods and

bivalvia. Diatomite rocks, highly clayey and silty, were also deposited in the central part of the eastern half of the basin. Pontian (Palamarev, 1972) and Dacian (Palamarev and Kitanov, 1988) fossil flora, undefined fishes and skeletal elements of birds were found in the clays, whereas within the coal bed mammal teeth and bones from the MN –13 zone (Nikolov, 1985) were established. The diatom flora corresponds to the Pontian one from the Sofia basin (Ognjanova-Rumenova and Yaneva, 2000). The age of the rocks is Late Miocene – Early Pliocene – Pontian to Early Dacian age.

The sediments from the Nedelishte and Kaisiinitza Formations represent respectively the transgressive - alluvial and the inundational - palustrine/lacustrine phases of the transgressive – regressive sedimentary cycle.

Tranerska claystone-sandstone Formation (new Formation)

The type locality and the holostratotype section are situated in the western part of the basin, in the “Nedelishte” open-pit mine, to the east of Malka Nedelia peak. The sediments

are located within the area of the non-existing now Tranertsi village. The Formation is represented by yellow-brown and grey-green fine-grained terrigenous rocks – clayey sands, sandy clays, coaly clays and fine-grained conglomerates with total thickness of 20-30 m. These sediments have been formed in an alluvial valley in which small temporary palustrine to lacustrine basins were formed. The rocks are deposited with transition over the sediments of the Kaisiinitza Formation, while the upper boundary is unconformity. The sediments correspond to the V-th horizon (Yovchev, 1960; and others). They most probably have Pliocene-Dacian age, as indicated by their stratigraphic position, the fossil flora (Palamarev, 1972; Palamarev and Kitanov, 1988) and mammal fauna (Konjaroff, 1932; Nikolov, 1985). The rocks are covered by Quaternary alluvial sands and gravels.

The Tranerska Formation sediments represent the regressive lacustrine-alluvial part of the transgressive – regressive sedimentary cycle with Pontian – Dacian age within the Belibreg basin.

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