

SUPPLEMENTARY DATA

Geochemical appraisal of hydrocarbon generative potential of Bulgarian part from the Thrace Basin: I. Linear biomarkers

G. Meracheva¹, M. Stefanova^{2*}, S. P. Marinov², E. Zaneva-Dobranova¹

¹ *Faculty of Geology and Exploration, University of Mining and Geology "St. Ivan Rilski", Sofia
1700, Bulgaria*

² *Institute of Organic Chemistry with Centre of Phytochemistry, Bulgarian Academy of Sciences,
Acad. G. Bonchev street, bl. 9, 1113 Sofia, Bulgaria*

e-mail: maia@orgchm.bas.bg

The studied area in tectonic aspect (Fig. S1) is situated in Early-Palaeogene Madjarovo foreland depression formed on the intensively faulted eastern part of Rhodope massif. The depression passes into the large Thrace Basin of NW Turkey to S-SE and is treated as NW flank of this basin. Different opinions about this structure in SE Bulgaria exist and various interpretations about tectonic framework of the area are expressed. However, more accurate tectonic division cannot be made and the internal structure and complex geological evolution of tectonic unit needs to be additionally specified. From the north the depression is bounded by the southern slopes of Sakar-Strandja anticlinorium. To the W-NW it is limited by Harmanli monocline, built by Precambrian metamorphic rocks, in SW - the Rhodope massif spreads on.

Rocks of different age and compositions are outcropped within the studied area. Information from well investigations is limited as the deepest one reaches 1754 m. Lithostratigraphic units of interest for oil/gas exploration consist of Tertiary-aged sedimentary successions.

In Fig. S2 a correlation of the prospective Fms. for hydrocarbons from the Bulgarian and Turkish parts is illustrated inasmuch as in the present study a relationship with the Turkish Fms. of the basin is anticipated.

In the NE part of the studied area above metamorphic rocks of the basement sedimentary units with Paleocene-Lower Eocene age are outcropped. These rocks are suggested to be an

analogue to the Hamitabat Fm. from the Turkish part. In the Bulgarian part of the basin the uppermost part of Upper Eocene is built up by rocks of the terrigenous-limestone-shale Fm. It can be correlated with Ceylan Fm. in Turkey. In this sedimentary succession, a horizon is marked, which is consistent with shallow marine carbonates and limestones of Sogukak Fm. that can be correlated to reefal limestones outcrop in the western part of the studied area.

Based on the petrographic and physical characteristics of the rocks in the Fms., the main reservoirs in the upper Eocene or Oligocene clastic horizons are expected. In the Turkish part of the Basin these intervals are the major reservoirs for the hydrocarbon accumulations. Shaley intervals of the terrigenous-limestone-shale Fm., and shales and mudstones of the Mezardere and Danisman Fms. analogues in Oligocene sequences, are considered as the most promising seals in the reservoir systems in Bulgaria. These intervals are further characterized by a good generative potential for hydrocarbons. The Oligocene shale-marl Fm. can be regarded as an analogue to Mezardere Fm. in the lower intervals, and to Osmancik and Danisman Fms. in the upper interval.

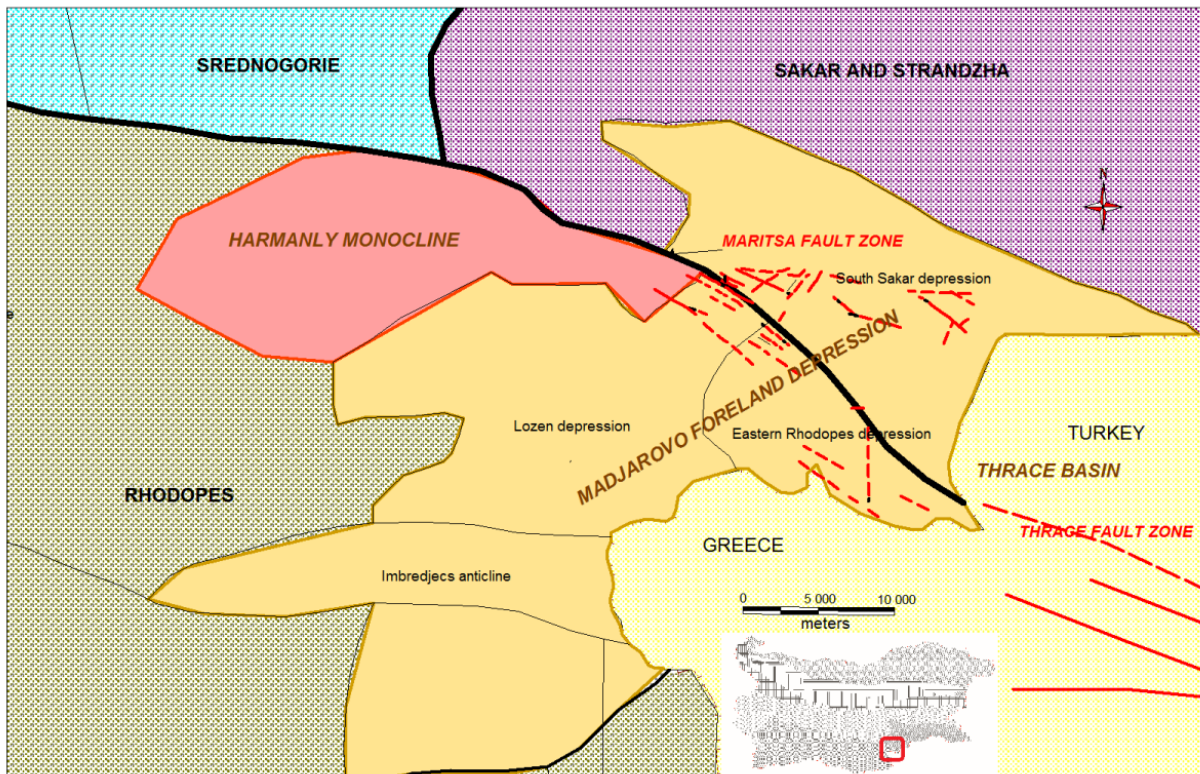


Fig. S1. Tectonic scheme of the Bulgarian part of the Thrace Basin.

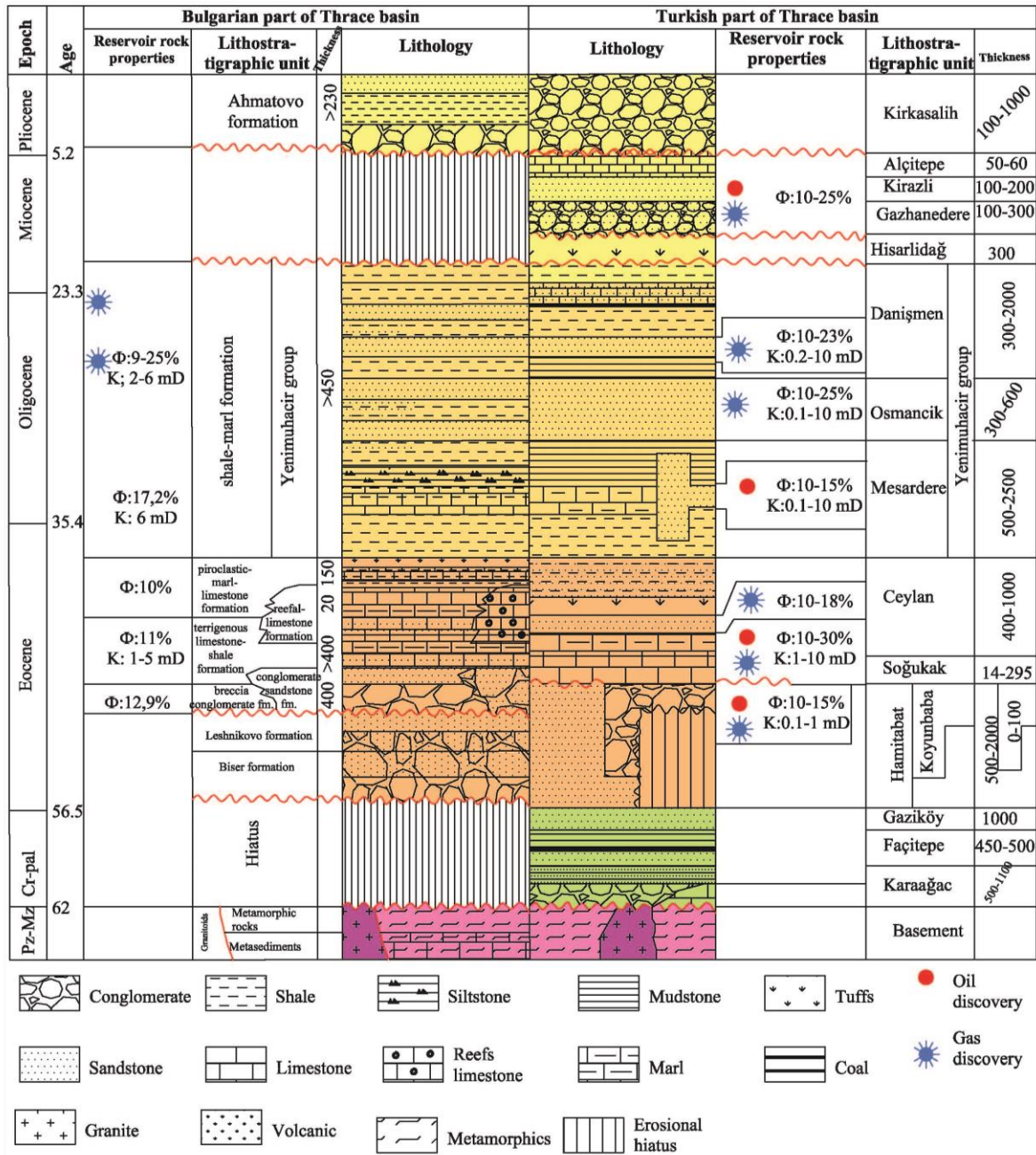


Fig. S2. Lithostratigraphy of the area under study in comparison with the Turkish part of the Thrace Basin.