

Rift sequence stratigraphy and its contribution to source rock understanding – Serbian part of Pannonian Basin

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The Pannonian basin is classical back-arc basin formed during the Miocene times. The recent studies of south-eastern part of Pannonian Basin showed that rifting took place along asymmetric simple shear extensional mechanism (Matenco and Radivojević, 2012). The analysis of syn-kinematic reflectors demonstrates that normal faulting migrates in time and space and took place on a wide Miocene time interval (roughly 20–5.5 Ma) (Matenco and Radivojević, 2012).

The most prolific source rocks in Serbian part of Pannonian Basin are marls and limestones of the Sarmatian and Pannonian (Kostić, 2012). Besides this sequence, source rocks are also to a lesser extent represented by shales of the Badenian and Pre-Badenian Tertiary, while the Lower Pontian shales were found to contain only gas-prone source rocks (Kostić, 2012). Since the Sarmatian sediments are mostly missing or have very restricted thickness in depressions close to the biggest oil and gas fields in Serbia (Ivanišević and Radivojević, 2018; Radivojević and Rundić, 2016) one can conclude that the main source rock is of Pannonian age. Those rocks correspond to the Endrőd formation hemipelagic marls, one of the source rocks at the largest hydrocarbon field in Hungary – Algyő field (Magyar *et al.*, 2006). The marly limestones and limy marls of Lower Miocene are most contributing source rocks in Croatian part of Pannonian Basin (Lučić *et al.*, 2001). Those sediments are absent in vicinity of biggest Serbian oil fields, since the rifting of major depressions appeared later.

The different timing of rifting affects the age (Lower Miocene to Pontian) and depositional environment (marine to lacustrine) of hydrocarbon generation. Because of that it is important to use the rift sequence stratigraphy approach which should lead to better understanding of the petroleum system elements.

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