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Triassic rift sedimentation in Eastern Moesia, Romania

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The existing literature (Paraschiv, 1978) describes Permian to Middle Triassic sedimentation consisting of continental to shallow marine deposits in Moesia, typical for the European passive margin. During the Upper Triassic, the tectonic regime in the Moesian Platform shifted from extensional to a compressional one characterized by continental facies. However, the available maps limit the extent of the Permian - Triassic deposits in the East up to the Intramoesian Fault. The lack of Triassic predicted in the Easternmost part of the Moesia still continues to be a problematic geological issue.
In order to improve the available Triassic facies maps the current study uses well data (logs, thin sections and core samples), 2D, and 3D seismic from the Eastern Moesia to determine the depositional environment as well as the basin's architecture and tectonics.
The 3D seismic interpretation revealed that the tectonics in the studied area is characterized by normal faults in the Lower Triassic that led to the formation of horst and graben structures followed by an inversion of the normal faults in the Upper Triassic. In consequence, the Lower Triassic is marked by syn-rift sedimentation, whereas post-rift deposits are specific for the Middle Triassic. The Upper Triassic sedimentation was influenced by the compressional regime that affected the whole Moesian Platform as the Paleo-Tethys ocean began to close.
According to the analyzed log patterns, core samples, and thin sections from wells located in the Eastern part of the Moesian Platform, Lower Triassic deposits indicate a braided fluvial/alluvial fan environment characterized by a coarse grained facies sourced from the footwall catchments, abundant in iron oxides and argillaceous minerals. Carbonate core samples dated as Middle Triassic consist mainly of bioclastic grainstones specific to a supratidal environment, due to the presence of anhydrite, dolomite and benthic foraminifera, pointing to the existence of a large carbonate platform developed in a period of tectonic quiescence. The observations made on thin sections enabled also a visual estimation of the porosity and reservoir qualities of the intercepted deposits. Although the fault system was inactive in Middle Triassic, the morphology inherited from the horst and graben structures most probably determines areas of different depths with specific facies, from supratidal to subtidal. Despite the fact that some core samples intercepted the continental facies of Upper Triassic, it appears to be mostly under the seismic resolution.
Therefore, this study integrates borehole and seismic data from the Eastern part of the Moesia and brings new information about the extent of the Triassic deposits and their reservoir quality, as well as the basin's palaeo-morphology and palaeo-environment.

Paraschiv, D., 1978, Considerations of the stratigraphic position of Triassic magmatites in the Moesian Platform (in Romanian): Studii si Cercetari de Geologie, Geofizica, Geografie, Seria Geologie, v.2, p. 291-298.