

Sedimentological and petrographical analyses of siliciclastic Oligocene deposits in the Teleajen Valley, Gura Vitioarei - Copaceni Structure, Romania

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Abstract

This paper presents the preliminary results of an ongoing study of the siliciclastic Oligocene deposits that compose the Gura Vitioarei – Copaceni Structure in the Teleajen Valley of Romania. The objectives of this study include: the identification of depositional facies and facies associations; the reconstruction of sedimentary bodies (architectural elements); the interpretation of the diagenetic history based on petrographic thin_section analysis; and an analysis of the effects of depositional and post-depositional processes on the reservoir quality of the Oligocene facies. The sedimentary deposits are composed of intercalations of quartz arenites (Kliwa Sandstone – potential reservoir facies) and bituminous marls (Podu Morii layers – potential source rock). The Kliwa Sandstone is represented by a siliceous sandstone, yellow-grey in color, poorly cemented, with frequent lutitic lenses. The bituminous marls, known as Podu Morii layers, display a tabular geometry with parallel stratification as the dominant sedimentary structure, a brown-grey color, and sparkles which indicate a high quantity of organic matter. The reservoirs are composed of quartzitic sandstone with silicious cement in association with bitumous and quartzose graywacke. The texture of arenites varies from fine to coarse arenites and is bimodal, indicating multiple sources areas. The arenites present medium permeability and porosity, and usually they have a good lateral continuity. The main porosity type is fissural, complemented by a primary and intergranular porosity. Based on facies and facies associations, the depositional model for the Kliwa Sandstone indicates turbidites in a deep-water setting, with the arenites related to a linear source. The best hydrocarbon reservoirs are represented by channel-fill and splay deposits.