FACIES CHANGES IN PENNSYLVANIA ROCKS ALONG THE NORTH FLANK OF THE WICHITA MOUNTAINS

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The area of investigation in southwestern Oklahoma extends from Cement field, Tps. 5-6 N, Rs. 9-10 W, northwestward along the north flank of the Wichita Mountains to the Oklahoma-Texas boundary. A study of Pennsylvania sediments in this area reveals conspicuous facies changes both laterally and normal to the mountain flank. The lateral facies changes show a close relationship to the provenance from which the sediments were derived. Correlation difficulties are amplified because of these facies changes. Fusulinids provide reliable age determinations when present. The Pennsylvania rocks are dominantly clastics. The principal facies near the mountain front is granite wash, a coarse clastic sediment composed primarily of igneous rock fragments with variable amounts of detrital carbonates and chert. Subordinate facies are arkosic sandstones, arenaceous, silty shales, and thin, argillaceous limestones. These continental and transitional facies interfinger basinward with normal marine sandstones, shales, and limestones. The study reveals that regionally the reservoir characteristics are largely controlled by the source areas of clastic sediments. The best reservoir development is found in the western part of the area where the source provenance is predominantly granite rocks.