ROSE RUN PAY ZONE PETROLOGY

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Abstract

Samples taken from full-diameter core and sidewall cores of the Rose Run sandstone from wells located in the producing fairway of east-central Ohio were evaluated by thin section and core analysis. The Rose Run sandstone is a subarkose with moldic porosity fabric derived from the dissolution of potassium feldspars. Measured porosities and permeabilities are as high as 16% and 300 md in producing intervals. Porosity and permeability are directly related to the degree of fresh water leaching while subaerially exposed during the Knox unconformity. Original primary porosity was reduced by pressure solution resulting in abundant quartz overgrowths. Bulk rock and clay fraction X-ray diffraction analysis exhibit minor clay concentrations of illite. Kaolinite is conspicious by its absence. This would suggest an open system during feldspar weathering from which the kaolinite was flushed. SEM confirms the illite as authigenic pore linings of the feldspar molds preserving the secondary porosity created by leaching. Some secondary porosity reduction occurred by growth of authigenic pyrite and dolomite in the pores prior to hydrocarbon migration.