O16-2 DIAGENETIC EVOLUTION OF LOWER DEVONIAN SANDSTONES, WEST HASSI R' MEL AREA, ALGERIA

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Reservoir quality of Lower Devonian sandstone in the West HASSI R'MEL area of Algeria is strongly affected by little, Chrolite and Kaolinite cements. Diagenetic quartz and, too a lesser extent dolomite and siderite have minor effects.

The environment deposits of the Lower Devonian sandstones are from middle to lower marine shelf.

Illite and Chrolite cements sandstones have much lesser permeability for a given porosity than Quartz cemented sandstones. The diagenetic sequence (paragenesis) is from early to late: Illite, Chrolite, Siliea, Dolomite, Siderite and Kaolinite.

Petrography analysis coupled with burial diagenetic modeling suggest that the early diagenetic Illite formed from the conversion (after compaction) of Smectite (Montmonrillonite) to Illite (fibrous).

Generation of oil from the Siurian source rocks is modeled to have occurred during Carbonifeous and Cretaceous/Mesozoic time and is post Kaolinite.

Kaolinite cementation is significally the last diagenetic phenomena in the Lower Devonian sandstones reservoirs.

The texture of diagenetic Kaolinite (Vermicular) may help to improve the reservoir quality.

Therefore, the late entrapment of hydrocarbon may help to meet a good reservoir filling.