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Authigenic Mineralogy in Nubian Sandstone Reservoirs

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Abstract : This paper presents the results of my sedimentological and petrographical study of the Nubian Formation in the north Gialo area in the Sirte basin in Libya that was used for identifying and recognizing the facies type and their changes through the studied interval. It also helped me to interpret the depositional processes and the depositional environments and describe the textural characteristics, detrital mineralogy, Authigenic mineralogy and porosity characteristics of the rocks within the cored interval. Thus, we can identify the principal controls on porosity and permeability within the reservoir sections for the studied interval. To achieve this study, I described the cores studied well and marked all features represented in color, grain size, lithology, and sedimentary structures and used them to identify the facies. Then, I chose a number of samples according to a noticeable change in the facies through the interval for microscopic investigation. The results of the microscopic investigation showed that the authigenic clays and the authigenic types of cement have an important influence on the reservoir quality by converting intergranular macropores to microporosity and reducing permeability. It is recommended to give these authigenic minerals more investigation in future studies since they have an essential influence on the potential of sandstones reservoirs.

Keywords : diagenesis processes, authigenic minerals, Nubian Sandstone, reservoir quality
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