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On the gas-oil relative permeabilities of the southern Algerian shales rock samples

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The gas-oil relative permeability behavior of different plugs from the southern Algeria Hassi-Messaoud reservoir has been experimentally studied in order to understand the fundamental processes of two-phase flow taking place within the macro-structure of different rock samples. The experiments have been achieved on the cylindrical Hassi-Messaoud plugs using the unsteady state method to measure the gas-oil relative permeabilities due to its operational simplicity. The impact of factors such as overburden pressure and rock characteristics based on the relative permeabilities curves has been carefully assessed. A great variation in the relative permeability curves trend has been experimentally seen for different rocks extracting from Hassi-Messaoud reservoir. This would be the consequence of the heterogeneous nature of the studied reservoir. This is closely related to either the rock nature or composition. The extracted parameters such as the initial oil in place (IOIP), water saturation and oil and gas relative permeabilities are strongly related to the above-addressed factors. The oil recovery rate at breakthrough is approximately 10-20% of the original oil in place (IOIP); the average is about 15%. The final oil recovery rate, obtained by moving at constant pressure is about 29.4-49% of the original oil in place (IOIP), the average is around 35%. The residual oil saturations (S_{or}) vary from 44-60% relative to pore volume (V_p); the average is about 53%.

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Characterization of black powder found in sales gas pipes

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Black powder (BP) is a typical contaminant usually found in sales gas pipelines. Its presence may cause major operational and maintenance issues including blockage of sensors and filters, erosion of pipeline bends and compromise the sales gas quality. There has been little known about its composition and sources of formation in the gas pipelines. Understanding its characteristics is considered crucial for appropriate mitigation planning and execution of smooth pipelines operations. Black powder samples collected from sales gas pipelines network of a Middle Eastern gas company are analyzed using semi electron microscopy with energy dispersive X-ray spectroscopy (SEM- EDX) and X-ray diffraction (XRD) methods for surface analysis and phase identification of the crystalline material. These analyses revealed variation in size distribution and shape of the BP samples. Likewise most of the BP particles were found agglomerated. Elemental analyses of the sample have shown presence of iron as the most abundant element after sulfur. XRD patterns can be indexed with both iron oxides and sulfides suggesting presence of moisture and hydrogen sulfide in the gas.

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