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Enhanced Oil Recovery In Reservoir Formation Rocks Using a Locally Sourced Material Alcohol {Palmwine}

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The importance of the daily usage of hydrocarbons and ever-increasing demand of energy cannot be overemphasized within and outside the country at large, even at the world scale. Fossil fuel is invariably the major source of energy in the world, it accounts for the majority Worlds electricity and also used to power aircrafts, automobiles, gasoline diesel used in power Generation in gas turbines and so on. For all these excessive demands of power generation, it would require drastic increase in the amount of crude oil recovered from reservoirs in petroleum and Gas industry.These would invariably pose a problem to the engineers within, to exhaust all the means of hydrocarbon recovery to enhance the amount of hydrocarbons recovered from reservoirs. Upon these basis lies the need to seek other recovery mechanisms that would efficiently increase the recovery of hydrocarbons and would of course be economical and cost effective, which is the basis of every operations carried out in the Oil and Gas industry. Oil wells that primary and secondary recovery processes have failed to improve would definitely require enhanced oil recovery which leads to the topic at hand, recovery of hydrocarbons in reservoir formation rocks with the aid of a locally sourced material, palm wine. The aim of this study to distinctively analyze and inspect the effects of using a locally sourced material (palm wine) to enhance the recovery of hydrocarbons in completed wells . Experimental observations have shown that components of alcohol and water paired with variations in core Sample can increase recovery, for this mixture oil recovery increased with increase in the alcohol content of the mixtures. This could be explained by the reduction of interfacial tension between oil and water mixture. The positivity of the result could have been generated from the reduction of interfacial tension and partly as the increase in the viscosity of the displacing fluid. Little or less experimental works have been carried out on the usage of (palm wine) to enhance the recovery of hydrocarbons . Alcohol is known to reduce the interfacialtension between oil and water, this property can be relied upon to achieve the objective. Most reservoirs are known for their low efficiency natural recovery mechanism therefore retaining enormous amount of hydrocarbons after their natural energy has been depleted, such reservoirs are often the best candidates for the aid of additional recovery methods. The oil phase is connected throughout the entire porous media over some saturation interval. As trapping occurs ,part of the oil is no longer by hydraulically connected to the flooding phase. An experimental study by Moore and slobod (1956) reported the effect of changing viscous and capillary forces on the residual oil saturation water wet cores. Viscous forces were altered by adding tertiary butyl alcohol to fluids to reduce the interfacial tension, it was reported that alcohol decreases the interfacial forces that hold the residual oil in place, thereby mobilizing more of the residual oil. Due to Forces, the effectiveness of water flooding is limited. This emphasizes the need to consider other processes such as the use of alcohol (palm wine), water mixtures to resolve the limiting capillary effects lowering the interfacial tension ,thereby mobilizing the residual oil left after water flooding or what the case maybe. The mobility ratio is the ratio of the displacing fluid mobility to the displaced fluid mobility.

Fig: Illustrating experimental results

Recent Publications

1. Alake A.S ,Kehinde A.J , Adeboye Y.O, Mapayieda.B.S (2016) – Experimental study ofenhanced oil recovery inreservoir formation rocks using a locally sourced material palmwine.
2. Oyedeji E.A ,Alake A.S ,Abuhulimen B.A(2016) – Gas leak Detection systems in pipelines.

Biography

Alake Adedamola has a Bsc in Petroleum Engineering from the University of Lagos, Lagos Nigeria. Currently working on an experimental research thesis in the production optimization in the enhanced oil recovery phase of the petroleum industry titled ''Enhanced oil recovery in reservoir formation rocks using a locally sourced material plamwine". He has also co researched '' Gas leak Detection Systems in Subsea pipelines [Oyedeji et al2016}. He is currently on his way to Conventry University in the Uk for a petroleum Engineering Masters Degree. He is a cofounder of INSTUCOM (Integrated student community) , a mobile and web application built for universities students, lecturers and respective industrial professionals. It's a central hub for academic/professional networking systems to improve the crawling learning process and capability and expose the young undergraduates to their respective career fields through E mentoring in Nigeria and West Africa. He was the the secretary and Public relation officer of the society of Petroleum Engineers SPE (University chapter), currently an SPE member. Also an active member of shell idea 360 and cofounder of young innovative Engineers at his University. He has worked with Total Upstream Company in Nigeria at the Geosciences and Reservoir and Inspection Department.

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