

Reservoir Characterisation By Predicting The Initial Oil in Place in A Reservoir Using Deep Learning And Application of Sensitivity Analysis For Improved Oil Recovery

Julia Mbamarah

Society of Petroleum Engineers - SPE FUTO, Nigeria

Abstract

The problem with production today is the inability to recover an optimal amount of the discovered resource. From statistical analysis, only about 60% of oil is recoverable and the highest amount recorded so far is only 80% of the discovered oil. That is to say that about 25% of oil still exists in oil field wells that have been abandoned.

Obtaining data from various oil fields in Nigeria, the quantity of discoverable oil was computed using Deep learning. The network was trained to accurately predict the estimated given volume of oil initially in place. A sensitivity analysis of the neural network model generated revealed which input parameters contributed majorly to estimating the I.O.I.P.

From the information deduced, an Ideal well to improve recovery would be one whose determinant factors are minimized or maximized according to feasibility of parameter alteration. The Neural Prototype was optimized by improving on the determinant properties of interest. A data update subsequently lead to further training and generally an improvement in the degree of recovery attainable.

In as much as other energy sources are being identified, oil and gas still remains an integral part of the energy industry and steps to ensure that recovery of this energy source is optimized to the greatest percentage must not be neglected.



Biography:

Julia Mbamarah is CEO/ FOUNDER at Overwhelmed Series, also member at Enactus FUTO. Presently she is Vice President at Society Of Petroleum Engineers - SPE FUTO.

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