

عنوان مقاله:

A New "D Model for Shear Wave Velocity by Utilizing Conventional Petrophysical Logs and Geostatistical Method

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خلاصه مقاله:

Shear wave velocity (Vs) is considered as a key parameter in determination of the subsurface geomechanical properties in any hydrocarbon-bearing reservoir. During a well logging operation, the magnitude of Vs can be directly measured through the dipole shear sonic imager (DSI) logs. On a negative note, this method not only is limited to one dimensional (ID) interpretation, it also appears to be relatively costly. In this research work, the magnitude of Vs is calculated using one set of controversial petrophysical logs (compressional wave velocity) for an oil reservoir situated in the south part of Iran. To do this, initially, the pertinent empirical correlations between the compressional (Vp) and shear wave velocities are extracted for DSI logs. Then those empirical correlations are deployed in order to calculate the values of Vs within a series of thirty wells, in which their Vp values are already recorded. Afterwards, the Kriging estimator along with the Back Propagation Neural Network (BPNN) technique are utilized to calculate the values of Vs throughout the whole reservoir. Eventually, the results obtained from the two aforementioned techniques are compared with each other. Comparing those results, it turns out that the Kriging estimation technique presents more accurate values of Vs than the BPNN technique. Hence, the supremacy of the Kriging estimation technique over the BPNN technique must be regarded to achieve a further reliable magnitude of Vs in the subjected oil field. This .application can also be considered in any other oil field with similar geomechanical and geological circumstances

كلمات كليدى:

"D Model, Estimation, Kriging estimator, well logs, Shear wave velocity

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