



Petrophysical approach of tight gas reservoir including shaly sand

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Since porosity of tight gas reservoir is very small, it is very important to estimate porosity from well logs precisely. If well logging porosity is not appropriate or does not match with core-tested porosity, other rock properties related to porosity cannot be estimated correctly. In case of shaly sand, we have to consider clay volume for estimating water saturation and effective porosity. The purpose of this study is to address a process issue for estimating total porosity, water saturation of tight gas reservoir including shaly sand from well logs. The methods for estimating total porosity with difference well logging responses include neutron-density method, neutron-sonic method, density method, sonic method and compared with core-tested porosity. After calculating correlation coefficient between well logging total porosity and core-tested porosity, we select a best matched result. Using this result, we try to estimate water saturation from well logs. Normally, Archie's method is very famous for calculating water saturation. Since it assumes clean sand condition, we tried to apply other methods considering clay volume. In this study, we applied Archie's method, dual water method, and Indonesian method for estimating water saturation from well logs and compared with core-tested water saturation.