

DC-Induced Acoustic Emission in Saturated Sand Models of Sedimentary Rock

SHORT COMMUNICATION

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A b s t r a c t

The results of laboratory experimental studies of the DC-induced acoustic emission (AE) in saturated sand models of sedimentary rock are presented. It is shown that direct current acting on a geological medium generates acoustic vibrations in it. The experimental methodology is based on recording acoustic pulses generated by the rock model (sample) when the electric field is applied. The amplitude-frequency parameters of the AE signals depend on petrophysical properties of the solid phase, on the salinity of porous medium, and the electric field (current intensity and voltage). The above research is the first step towards the full identification of the characteristics of the AE signals generated by rocks in a DC electric field.

Key words: external electric field, acoustic emission, saturated rock, electrical double layer.