

WELL LOGGING (GEOPHYSICAL) PARAMETERS OF THE NEOGENE SANDSTONES WITH A HIGH SILT CONTENT

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In the sandstones of the Hungarian Neogene basins the silt occurs in a great amount. The silt component of the sandstones greatly affects the well logging (geophysical) parameters. The primary source of this influence is performed by the highly increased specific surface area of the grains related to the effective porosity in the silty sandstones. With a great number of silicate minerals the ionic crystal structures are electrically polarized caused by some ion — substitutions and by means of some unbalanced negative valencies, thus they possess a negative excess charge. This results in creating electric double layers at the surface boundaries between the solid grains and the saline pore water. The outer diffused cation shells of the double layers give a surplus electric conductivity to the silty sandstones. On account of this surplus conductivity the electric resistivity of the silty sandstones depends on the magnitude of the electric field strength, thus it behaves as a nonlinear resistivity. The dielectric rock grains like the silt grains do not affect the self potential (SP) of the sandstones; it is affected only by the electrically conductive rock grains (e. g. the clays). The gamma ray activity of the sandstones increases with increasing silt content.

On the basis of our laboratory investigations the upper limit of the grain size diameter of the silt may be regarded 100μ as a minimum (probably a little higher) with the — Lower-Pannonian sandstones in Algyő structure from point of view of the specific influences exerted by the silt onto well logging (geophysical) parameters.