

J. A. JARZYNA, P. I. KRAKOWSKA, E. PUSKARCZYK,
K. WAWRZYNIAK-GUZ, M. ZYCH

AGH University of Science and Technology, Krakow, Poland, Faculty of Geology Geophysics and Environmental
Protection, Department of Geophysics

Scaling of high resolution laboratory and well logging data on the basis of resistivity imaging logs and macroscopic geological core description, Baltic Basin shale gas formation case study

Abstract

XRMI log provided high resolution information on lithology of wellbore in the thinly-bedded shale gas formations. Compared log resistivity images and geological macroscopic descriptions of cores enriched the qualitative recognition of lithology. Included laboratory experiments results in the form of precise point data increased reliability of lithological recognition and petrophysical interpretation. Laboratory results from various methods dedicated to shale gas formations recognition, i.e. bulk, grain and material densities, dual liquid porosity and porosity from NMR experiment, Pressure Decay permeability, pores distributions, specific surface, intensity of natural radioactivity and XRD origin mineral components together with TOC were combined with well log outcomes: GR, RHOB, Pe, NPHI and results of the comprehensive interpretation, i.e. kerogen volume, total and effective porosity, water/gas saturation etc. Relationships between rock parameters from well logging and laboratory results on the background of macroscopic core description formed the credible platform for shale gas formations recognition and determination of mineralogical, reservoir and mechanical properties.