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Non-Destructing Testing of Sandstones from Unconventional Reservoir in Poland with Use of Ultrasonic Pulse Velocity Technique and X-Ray Computed Microtomography

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Abstract : This study concerns high-resolution X-ray computed microtomography (µCT) and ultrasonic pulse analysis of Cambrian sandstones from a borehole located in the Baltic Sea Coast of northern Poland. µCT and ultrasonic technique are non-destructive methods commonly used to determine the internal structure of reservoir rock sample. The spatial resolution of the µCT images obtained was 27 µm, which enabled the author to create accurate 3-D visualizations of structure geometry and to calculate the ratio of pores volume to the total sample volume. A copper X-ray source filter was used to reduce image artifacts. Furthermore, samples Young's modulus and Poisson ratio were obtained with use of ultrasonic pulse technique. µCT and ultrasonic pulse technique provide complex information which can be used for explorations and characterization of reservoir rocks.

Keywords : elastic parameters, linear absorption coefficient, northern Poland, tight gas
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