

APPLICATION OF COMPUTED TOMOGRAPHY (CT) IN ROCK CORE ANALYSIS

Marek Dohnalik, Katarzyna Drabik, Mateusz Orzechowski, Rafal Skupio
Oil and Gas Institute - National Research Institute, Lubicz 25A, Krakow, Poland

Computed tomography CT is a non-destructive and non-invasive method which allows to visualize the internal structure of the investigated object. More information describing the foundations of this method can be found elsewhere [Stock S.R.]. Tomography tests were performed with the use of medical scanner Philips 705 Ingenuity CT in order to visualize the core structure of investigated rocks.

The aim of the speech is to show the applications of the method of X-ray computed tomography in the study of one meter sections of rock cores. The will include following issues:

- *correlation analyses between X-ray absorption factor and following parameters obtained from laboratory measurements (bulk density, total and effective porosity) and the well log interpretation (bulk density, porosity),*
- *analysis of sedimentary structures in rotliiegend and carbonate rocks,*
- *comparison of the core image description obtained from computed tomography with the XRMI probe interpretation,*
- *porosity calculation based exclusively on CT image,*
- *sampling of representative core plug for further analysis,*
- *dual energy CT application.*

Stock S. R.: MicroComputed Tomography: Methodology and Applications. CrcPress, Bocam Raton, USA, 2009, pp. 332.

TECHNOLOGICAL PROPERTIES OF DRILLING FLUIDS FOR REDUCING THE MIGRATION OF GAS

G. Zima, M. Uliasz, S. Błaż, B. Jasiński

Oil and Gas Institute – National Research Institute

zima@inig.pl, uliasz@inig.pl, blaz@inig.pl, jasinski@inig.pl

The paper presents the results of laboratory tests, which were aimed at investigating the effect of drilling fluids with a specific composition on the properties of drilled rocks with special emphasis on research in shale dispersion in liquid medium used during drilling and cementing holes in the areas of gas exhalation occurrence. The results made it possible to assess the impact of drilling fluid on the degree of shale protection against the adverse effects of washing liquid and filtrate of cement slurries. On the basis of studies carried out, it was found, that the composition of fluids used for drilling containing additional inhibitors of hydration of rocks or the use of more efficient inhibitors, resulted in better protection of the shale against the adverse effects of the filtrate from the cement slurry. It was also agreed that an important factor influencing the quality of cementing is the thickness of the filter cake formed on the wall of the hole. It also presents studies on the selection of agents such as oxidizers and enzymes in the removal of filter cake from the borehole wall. Positive results of the use of oxidants and enzymes in washing liquid compositions for removal of filter cake were obtained.