

SUMMARIES

Drożdżak R., Twardowski K.: Influence of Scale Effect on the Results of Permeability Tests on Rock-Ground Porous Media • Drilling Oil and Gas 2009 • Volume 26 • No. 4

The most important factors describing the observed variability of results of tests on physical properties of rock-ground porous media are described in this paper. The measurement scales are used to quantitatively characterize the rock mass. The principles and conditions of effective homogenization of porous media, enabling their description on mesoscopic scale were discussed. The influence of the so-called scale effect on the results of tests on physical properties of porous media was presented on the example of evaluation of permeability of ground and rocks, with emphasis on the coefficient of ground filtration. The differentiation of the obtained evaluation was shown in view of employed techniques and research methods, mainly laboratory and field ones.

Keywords: *scale effect, scale of measurement, permeability, filtration coefficient, structural properties of the rock mass*

Dubiel S., Złotkowski A.: Applicability of Novel Drill Stem Tester „Inflatable” by Baker-Lynes to Borehole and Reservoir Engineering • Drilling Oil and Gas 2009 • Volume 26 • No. 4

Novel drill stem testers „Inflatable” by an American company Baker-Lynes are widely applicable to borehole and reservoir engineering. Testing techniques and technologies based on industrial experience (since 1992) of the Polish Oil and Gas Prospecting Company, Cracow are presented in the paper. The DST selection principles in view of geologic conditions and technical state of the borehole are also discussed.

Keywords: *oil prospecting, testing of hydrocarbon fields, drill stem tester „Inflatable” by Baker*

Fafara Z., Szuflita S.: Laboratory Analyses of Adsorption of Selected Oil-products in the Solid Phase of the Ground • Drilling Oil and Gas 2009 • Volume 26 • No. 4

The cognition of parameters of mathematical model, describing the properties of porous medium and the migrating fluids is necessary for adequate modelling of migration of oil-contaminations in the soil layer of the ground. One of the basic processes shaping the course of hydrocarbons migration in the ground is adsorption of oil products in the solid phase of the ground. It determines the range of penetration of the porous medium by oil products and delay of its migration. Specialist literature does not give exact figures illustrating the level of adsorption in various types of the ground. The presented values are usually average adsorption values, which is used for numerical modelling of oil products migration in the ground, thus consciously introducing an inadequate source of the description. Hence, the Authors designed a laboratory post for analyzing the coefficient of hydrocarbons adsorption, making measurements for four naturally selected different models of homogeneous loose ground medium. The coefficient of heterogeneity stays in the interval 1.4–1.7, whereas the efficient diameter varies from 0.3 mm to 2.7 mm. The prepared physical models represent fine, medium and coarse gravels and sands. Typical oil products were used for the experiments, i.e. Pb-free ethylene and diesel oil. The obtained results have been discussed in view of the future mathematical models of hydrocarbon adsorption worked out depending on ground properties, especially of grain composition. The existing mathematical models of hydrocarbon adsorption on solid phase of the ground relate this coefficient only with the organic matter and/or clayey fraction content.

Keywords: *adsorption of selected oil-products*

Jurca A., Vătavu N., Sicoi S., Lupu L., Păun F.: Issues and Interpretations of the Ignition Risk Rised from Mechanical Sparks in Explosive Atmospheres • Drilling Oil and Gas 2009 • Volume 26 • No. 4

The potential explosive zones are those industrial areas where there is a risk to be produced a mixture of air with gas, vapors, mists or combustible dust which can be ignited by the different ignition sources, resulting explosions which can produce life losses. The metallic materials of the equipment case or their components, from industrial installation, can become ignition sources by mechanical sparks and/or hot surfaces. The authors had identified and analyzed the ignition capacity by mechanical sparks on the main metallic materials and had established original solutions to prevent ignition of the explosive atmospheres.

Keywords: *mechanical sparks, ignition, explosive atmospheres, explosion protection*

Knez J., Knez D.: Identification of Ground Water Contamination by Aromatic Hydrocarbons in the Region of PKN ORLEN Kielce-Bialogon Petrol Station • Drilling Oil and Gas 2009 • Volume 26 • No. 4

Petrochemicals released from ZGPN CPN caused contamination of underground water. Benzene is most representative part and for this reason its paths were investigated. To prove simulation results wellbore was drilled and water samples were investigated. Laboratory measurements confirms computer simulation results.

Keywords: *underground water, computer simulation, underground water contamination*

Krochmal J.K.: New Generation Impedance Meters as a Source of Advancement in Electrical Polarization Measurements • Drilling Oil and Gas 2009 • Volume 26 • No. 4

Theoretical aspects of binary shaping of a sinusoid in advanced impedance meters enabling computer realization of spectral measurements of impedance components are presented in this paper. One of the components is angle of phase shift, which represents electric polarization caused by electric charge shift. The analysis of angle of phase shift in water with different NaCl content enabled reverse analysis, i.e. assessability of salt concentration from the angle of phase shift. This measurement method was patented which proves the novel character and advancement in the study of electric polarization with new generation impedance meters. Similar analyses were performed in various sandy-clayey media, on the basis of which methodics of evaluating clayey material content vs. sand could be determined. This has been a subject of patent application since 2007.

Keywords: *impedance meters, electrical polarization*

Laciak M.: Problem of Errors in Calculating Using Statistical Simulations of Gas-Pipe Network • Drilling Oil and Gas 2009 • Volume 26 • No. 4

Modelling and simulating gas-pipe network is a significant part of difficulties during planning as well as operating process. Most of computational methods referred to gas-pipe network, exhibit some errors in calculations.

This paper presents reason-effect analysis of errors occurring in statistical simulation. Paper describes most of the parameters related to exploration gas-pipe network that can lead to an error in calculation using statistical simulation.

Keywords: *gas, statistic, simulation*

Rotaru M., Cioca L.: **Identifying Dangers and Assessing Risks for the Administrative Personnel at „Hermann Oberth” Faculty of Engineering, Sibiu, Romania** • Drilling Oil and Gas 2009 • Volume 26 • No. 4

A risk assessment is the starting point in optimizing the prevention of accidents and occupational illnesses at work. Whether it's a job in a shop, university or an enterprise, such an analysis allows the ranking of risks according to their size and allocation of resources for priority action. Of the many methods used globally and nationally to assess the risks of accidents and professional illness, in this work we have chosen to use the method developed by INCDPM (National Institute of Research Development in Labour Protection) Bucharest. This method was approved by the Ministry of Labour and Social Protection and reedited in 2002.

Keywords: *risk assessment, administrative personnel, recommended measures*

Stryczek S., Gonet A., Wiśniowski R., Biskup T.: **The Influence of Cement Dust Generated by Cement Plant in Chelm on Technological Properties of Sealing Slurries** • Drilling Oil and Gas 2009 • Volume 26 • No. 4

The environmental protection issues grow in significance, therefore looking for potential additives of sealing slurries among waste products generated by various branches of industry, e.g. cement industry is fully justifiable. It was generally accepted that the contemporary process of cement production is waste-free as by-products of cement production are utilized at various stages. However, not all by-products are fully technologically utilized. Therefore it seems justifiable to analyze whether or not the cement dust by-product can be used as an additive of sealing slurries for modifying their technological properties so that they can be applied for sealing and reinforcing ground and rock mass purposes.

The results of laboratory analyses of influence of various concentrations of cement dust generated by cement plant in Chelm on technological parameters of fresh and set sealing slurries of different parameters of water mixtures based on metallurgical cement CEM III/A 32,5.

In the course of the analyses there were established optimum concentrations of cement ash additives in slurries, applicable to such geoengineering works as sealing and reinforcing ground and rock mass, with special emphasis on hole injection methods.

Keywords: *cement, sealing slurries, cement dust, geoengineering*

Wysocki S., Wysocka M.: **Application of New Polycationite in HDD Muds – Lab Research** • Drilling Oil and Gas 2009 • Volume 26 • No. 4

One of the most important in HDD technology is a drilling mud with specific properties. In this paper the results of new bentonite application in HDD drilling muds are presented. Tested muds characterize with good technological properties, it gives good perspectives of industrial development.

Keywords: *drilling muds, horizontal directional drilling*

Zubrzycki A., Dubiel S.: Mineralization of Autochthonous Miocene Formation Waters in the Area of Carpathian Foredeep and their Influence on Natural Environment
• Drilling Oil and Gas 2009 • Volume 26 • No. 4

Formation waters and drilling fluids are hazardous for the natural environment, particularly in case of blow-outs during drilling, well completions, and oil/gas production. In the paper fluids from DST tests and Miocene (mainly Lower Sarmatian) formation waters from two areas of the Carpathian Foredeep (first – southern in area Tarnów-Rzeszów and second north-eastern Wola Obszańska – Lubliniec) were analyzed. Thickness of the autochthonous Miocene sediments and mineralization of its formation waters are different in these areas although both are gas-bearing. On the basis of the chemical composition quantitative analysis of Miocene fluids and formation waters the hazard to natural environment was determined.

Keywords: *protection of natural environment, mineralization of fluids and formation waters, miocene, Carpathian Foredeep*