SUMMARIES

Băbuț G., Moraru R., Cioca L.-I.: **Considerations Regarding Global Environmental Risk Taxonomy and Assessment** • Drilling Oil and Gas 2009 • Volume 26 • No. 3

Based on a critical analysis of literature, the paper has as goal to highlight the basic elements, which should be taken into account in assessing a coherent framework for assessment and classification of global environmental risks. In order gather the attention of professionals in this field of concern, a rather unemployed approach is used, based on the analogy with characters and situation specific to Greek mythology. In correlation with the above-mentioned issues, in the final section of the paper, an attempt is made to develop a management strategy of global environmental risks.

Keywords: *environment, risk, assessment, management, strategy*

Bednarz S., Rzyczniak M.: **Quantitative Evaluation of Professional Knowledge Problems in Oil and Gas Industry** • Drilling Oil and Gas 2009 • Volume 26 • No. 3

The considerations on test exams usability for knowledge effective examination and skills of large group of persons in short period are described in the article.Probability changes of test passing without knowledge required are specified in form of diagrams and tables including such parameters as: test questions number, answers variants number and required percent of correct answers assuming the same weight of all questions answered.

Keywords: *knowledge level, skills level, exam, test*

Drożdżak R., Twardowski K.: **Analysis of Water-permeability of Compact Ground Using Kaczyński Method** • Drilling Oil and Gas 2009 • Volume 26 • No. 3

Theoretical and practical assumptions of Kaczyński method for laboratory determination of filtration coefficient in compact ground described in the paper. Tests focused on determining technical-methodic conditions of measurements for establishing the influence of chemistry of the filtrating water on the obtained parameters. The physical model of compact ground as well as physicochemical properties of various concentrations of NaCl and $CaCl_2$ water solutions used as working fluids were analyzed quantitative and qualitative. For comparison's sake, tests for demineralized water were made. The obtained results are promising as far as evaluation of the correction coefficient accounting for the influence of chemistry of water on water permeability of ground is concerned.

Keywords: *filtration coefficient, laboratory measurements, Kaczyński method, electric double layer*

Dubiel S.: **Analysis of Hazard of Ground and Water Environment on the Basis of Primary Blow-out Data** • Drilling Oil and Gas 2009 • Volume 26 • No. 3

The way of determining reservoir pressure gradient and specific gravity of reservoir fluid on the basis of initial blow-out data are presented in the paper. Graphic materials and figure examples based on industrial data are given. Types of contaminations of ground and water environment in the case of ongoing blow-out.

Keywords: *blow-outs in boreholes, predicted reservoir conditions, contamination of ground and water environment with oil*

Dudlya N.A., Popov A.V., Telnih N.N., Tsaplin E.G.: **Application of Injection Technologies in the Device of Ground Constructions in Different Geological Terms** • Drilling Oil and Gas 2009 • Volume 26 • No. 3

A theoretical ground and examples of successful application of injection re-enforcement of soils for the improvement of his uniformity and rise of bearing strength is given in foundation of different buildings.

Keywords: *injection technologies*

Fąfara Z., Mirkiewicz P.: **Laboratory Analyses of Diffusion of Hydrocarbon Vapour in Ground Medium** • Drilling Oil and Gas 2009 • Volume 26 • No. 3

Numerical modelling of migration of oil contaminations in the ground aeration area requires accounting for a number of accompanying processes, out of which diffusion of hydrocarbon vapours in the porous space of the ground may be sometimes very important. This, however, requires cognition of a number of parameters of a mathematical model describing properties of the porous medium, migrating fluids and conditions of migration. The coefficient of diffusion of hydrocarbon vapours in ground is crucial for the correct description of diffusion. However, specialist literature does not give detailed figures, except for averages of diffusion coefficients which cannot be referred to specific types of the ground. This is connected with the hardly accessible uncertainty coefficient to the final results of calculations. Therefore, the Authors designed a laboratory post for analysing hydrocarbon vapours and performed measurements for four natural, specially selected different models of homogeneous ground medium. The prepared physical models represent grounds containing gravel and sand fractions: course, medium and fine sands. Pb-free ethyline was used as a source of hydrocarbon vapour. The obtained results have been discussed in the paper. In the future they may be used for construing a mathematical model enabling one to more precisely assess the coefficient of diffusion of hydrocarbon vapours in ground air, depending on the ground properties, especially its grain compositions.

Keywords: *migration of oil contaminations, diffusion of hydrocarbon vapour*

Kwaśniewski K., Sas J.: **Barriers of Market Development of the Compressed Natural Gas for Car Refueling in Poland** • Drilling Oil and Gas 2009 • Volume 26 • No. 3

The forecast for 2020 for the main alternative gas for vehicles estimate the economic (market) potential of fuel produced of bio-mass at 15%, natural gas at 10%, LPG at 5% and hydrogen at a few percent. The development strategies of the NGV market in Europe and in the Asia-Pacific area are completely different. The substitution of fuel oil derivatives in Poland on the estimated level of 2% in 2010 and 5% in 2015 will not be possible to implementation (realization); thus the strategic aims in this area have to be corrected (adjusted). The implementing strategies and costs are the crucial issues at the present stage of the market development in Poland. The solutions of vehicles production and gas compression are the fully developed technology and do not create any operational risk. Based on the European countries experiences we can say that in order to reach the critical mass it is necessary to build in Poland a few hundred CNG gas stations, opened 24 hours. The analysis of operational costs of the best solutions in Poland shows that construction and exploitation of the gas stations can be effective at the 1,35 zł/Nm^3 CNG price (for the prices of the first three months); so it guarantees the competitiveness toward the fuel oil derivatives. In that case PGNiG S.A. is obliged to reorientate its strategy of exploitation their CNG gas stations, to standardize the solutions of constructing and equiping as well as the CNG price policy.

Keywords: *compressed natural gas, CNG, refuelling stations, ecological gas (fuel)*

Lewkiewicz-Małysa A., Winid B.: **Geological Aspects of Injection Wells Used for Underground Storage** • Drilling Oil and Gas 2009 • Volume 26 • No. 3

Geological structures that are suitable for injection with formation waters must meet conditions that assure environmental protection and waters storage properties. The suitable capacity of the injection layer is related to its

porosities, fissuring, effective permeability and to spatial structure of the geological layer. Factors determining the capacity of injection wells used for underground storage are discussed in the article. Geological conditions which meet the environmental requirements for using the formation for an injection well are also discussed.

Keywords: *injection layers, formation waters, environmental protection*

Łaciak M.: **Influence of Elevation Changes on Hydraulic Calculation of Gas Pipelines** • Drilling Oil and Gas 2009 • Volume 26 • No. 3

Modeling end calculation of the gas networks always make the essential problem both on storage projecting and the exploitation of network. With regard on specific functioning of gas net, received solutions have often smaller or larger errors connected with received on stage of projecting approximations or they are also result of omission of look like unimportant parameters. Many of them can be connected with ignoring changes of gas-pipe or gas net elevation. Article presents method of calculation (equation), led out in support of equation of behavior of energy of gas flow in pipelines. Equation based on changes of density or pressure in the pipeline.

Keywords: *gas network, hydraulic calculation, natural gas flow*

Steliga T., Kapusta P., Jakubowicz P.: **Estimation of Bioremediation Effectiveness on the Basis of Toxicological Tests** • Drilling Oil and Gas 2009 • Volume 26 • No. 3

Petroleum products are complex mixture of compounds of varied biological properties. They can cause harmful changes in contaminated ecosystems and threaten humans and living organisms as well. Bioremediation (including bioremediation stimulated with biogenic substances and inoculation with biopreparations from autochthonous microorganisms) can result in creation of metabolites with a varied structure and biological activeness, which has been partly recognised. Some of them are more toxic than an initial substrate. Besides, they have mutagenic features and are responsible for cancer. Estimation of effectiveness of remediation in waste pits was completed with toxicological monitoring. It was led with the use of living organisms as biomarkers representing all trophic levels of a chosen ecosystem: producers, consumers and reducers. This process enables total estimation of natural environment condition. The aim of the research was to determine influence of petroleum contaminants and indirect metabolites (in bioremediation processes) on soil biocenose. The results of biological tests (toxicity, phytotoxicity and genotoxity) have been taken into account. The following biological tests, prepared and produced by Microbiotest (a Belgian company), were applied: Phytotoxkit, Ostracodtoxkit, acute toxicity tests Microtox Solid Phase and Ames mutagenity tests. The obtained results enable observation of changes in toxic properties during purification of soil taken from waste pits. In addition, it can be claimed if the areas are suitable for agricultural and forest usage.

Keywords: *bioremediation*

Vătavu N., Vătavu S., Părăian M., Jurca A., Păun F.: **New Test Methods of Non-Metallic Pipeworks for Liquid Fuels** • Drilling Oil and Gas 2009 • Volume 26 • No. 3

The non-metallic pipeworks are used on an increasingly wider scale in transport or storage installations in petrol-chemical industry and in the petrol filling stations, due to their superior performances compared to the metallic pipeworks (corrosion and risk of stray currents are two essential arguments in favour of using the non-metallic conduits. For the non-metallic conduits it must be taken into account the explosion risk that occurs because of the combustible vapours emitted into the atmosphere and which may form an explosive mixture. This is the reason why they must comply to the requirements provided in SR EN 14125; having this in view, in the paperwork are presented specific laboratory tests, emphasizing here the tests in positive, negative (vacuum) and cyclic pressure, tests for which are shown the test stands designed and realized in the laboratory LSIEM-INCD INSEMEX Petrosani.

Keywords: *underground non-metallic pipes, safety requirements*

Wysocki S.: **Non-OCMA Bentonite Modyfications with Polymer PT-25 for HDD Mud** • Drilling Oil and Gas 2009 • Volume 26 • No. 3

HDD drilling fluids have some important functions. A good drilling fluid should provide optimal cutting transport, have high lubrication in stem and drill bit lubrication as well as stabilize the borehole permanently by sealing the sides of the bore. The most widely used drilling fluids for HDD applications are based on bentonite. Our laboratory research is focused on modification of bentonite OCMA by new polymer to reach certain, required parameters such as low viscosity, high yield point and ability to create gel structure. It's also important to note that minimizing of filtration is highly desired. Based on the research, we can conclude that observed HDD fluids exhibit good technological parameters, as well as low filtration. Our laboratory research proves to be effective at bentonite OCMA modifications with use of new polymers.

Keywords: *bentonite, drilling muds, HDD*